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The Influence of Psychological Quality on Learning Outcomes in Vocal Music: An Empirical Study Based on Performance Anxiety

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Abstract: This study examines the influence of Psychological Quality on the learning outcomes of vocal music majors and the mediating role of Music Performance Anxiety (MPA). A quantitative design was employed with 100 undergraduate students from five Chinese universities. Structural Equation Modeling (SEM) was used to test the relationships among the variables. Results showed that Psychological Quality positively predicted learning outcomes ($\beta = 0.48$, $p < 0.001$) and negatively predicted MPA ($\beta = -0.42$, $p < 0.001$). MPA negatively predicted learning outcomes ($\beta = -0.31$, $p < 0.001$) and partially mediated the effect of Psychological Quality, accounting for 27.1% of the total effect (indirect effect = 0.130, 95% CI [0.072, 0.201]). These findings suggest that Psychological Quality can both directly enhance learning outcomes and indirectly improve performance by reducing MPA, offering empirical support for integrating psychological support into vocal music education.

Keywords: Psychological Quality; Music Performance Anxiety; Vocal Music Learning Outcomes; Mediation Effect; Vocal Music Majors

1 Introduction

1.1 Research Background

Vocal music education is a complex learning process requiring mastery of breathing control, vocal techniques, and musical expression, while also demanding emotional communication and artistic appeal in classroom and stage performances (Vasylevska-Skupa et al., 2024). Because the body functions as the “instrument” in vocal training, learners’ psychological states directly influence singing quality, stage performance, and learning persistence (Papageorgi, Hallam, & Welch, 2007). In such performance-oriented contexts, Music Performance Anxiety (MPA) has become a prevalent difficulty, typically manifested as accelerated heart rate, distraction, and self-doubt (Kenny, 2011).

MPA is a form of situational anxiety triggered by evaluative threats, encompassing physiological symptoms such as palpitations and sweating, as well as cognitive symptoms like distraction and memory decline (Burin & Osório, 2017; Kenny, 2011). For vocal performers, this condition is particularly salient since the instrument resides within the body (Becker, 2023). Emotional disturbances can destabilize singers’ “sense of the instrument” undermining stage control and expressive performance (Kiik-Salupere, 2012). Thus, vocal students are especially vulnerable to emotional fluctuations, which can hinder performance quality, stage expressiveness, and learning persistence.

In contrast, Psychological Quality is recognized as a key resource, encompassing emotional regulation, self-belief, stress tolerance, and resilience. Research shows that students with higher resilience sustain stronger motivation and stability under pressure (Cassidy, 2016; Yang et al., 2024). Nevertheless, within vocal training—a domain of high emotional exposure and frequent evaluation—systematic empirical studies on how Psychological Quality influences performance anxiety and learning outcomes remain scarce (Yang et al., 2025; Vasylevska-Skupa et al., 2024).

1.2 Research Objectives

Building on the above, this study aims to examine the impact pathways of Psychological Quality on vocal music learning outcomes, with a particular focus on the mediating role of Music Performance Anxiety. Specifically, it proposes and tests a mediation model in which “Psychological Quality → Music Performance Anxiety → Learning Outcomes.” Two hypotheses are posited:

(1) Psychological Quality positively predicts vocal music learning outcomes.

(2) Music Performance Anxiety partially mediates the relationship between Psychological Quality and vocal music learning outcomes.

Through survey data and quantitative analysis of undergraduate vocal music majors, this study seeks to clarify the internal mechanisms by which individual psychological states shape artistic learning performance.

1.3 Research Significance

This study carries both theoretical and practical implications. According to the Control-Value Theory, learners' control and value appraisals of learning activities are key antecedents of achievement emotions (e.g., anxiety, pride, boredom). These emotions act as mediators between individual traits and learning performance, ultimately influencing achievement quality (Pekrun, 2006; Pekrun, 2024). Therefore, whether Psychological Quality enhances vocal learning outcomes by alleviating performance anxiety is a mechanism worthy of in-depth examination.

From a practical standpoint, the findings provide empirical evidence for integrating psychological support into higher education vocal training. They highlight the importance of systematically cultivating students' emotional regulation and Psychological Quality alongside technical training, in order to enhance stage performance and learning persistence, thereby promoting the holistic development of artistic talent.

The specific research questions include:

Q1: Does Psychological Quality have a significant positive effect on vocal music learning outcomes?

Q2: Does Psychological Quality exert a negative effect on Music Performance Anxiety?

Q3: Does Music Performance Anxiety negatively affect vocal music learning outcomes?

Q4: Does Music Performance Anxiety mediate the relationship between Psychological Quality and vocal music learning outcomes?

2 Literature Review

2.1 Psychological Quality in Vocal Learning

"Psychological Quality" is a concept developed within Chinese psychology. Zhang Dajun's research team has conducted systematic studies on its structure and measurement tools, which have gained recognition in the international academic community (Chen, 2012). They define Psychological Quality as stable traits rooted in physiological conditions that transform external acquisitions into adaptive, developmental, and creative behaviors, and classify it into three dimensions: cognitive, personality, and adaptive factors (Zhang et al., 2000).

In Western research, some aspects of Psychological Quality overlap with the concept of self-efficacy. Bandura's (1997) self-efficacy theory states that individuals' beliefs about their abilities directly influence their motivation, persistence, and performance. In music education, self-efficacy is strongly linked to learning persistence, vocal performance, and stage confidence (McCormick & McPherson, 2003). At the same time, Music Performance Anxiety (MPA) is another critical entry point for studying Psychological Quality. Kenny (2011) suggested that learners often experience anxiety in evaluative contexts, which negatively affects stage performance and learning outcomes. In vocal learning, such anxiety often manifests in physiological tension that interferes with voice control and emotional expression. Therefore, Psychological Quality, self-efficacy, and performance anxiety together form a key psychological mechanism influencing the effectiveness of vocal learning.

2.2 Vocal Learning and Psychological Factors

Vocal learning is not merely a technical process but also a highly emotional and performative activity. Previous studies highlight the significant role of confidence and self-efficacy in vocal learning outcomes. McPherson and McCormick (2006) found that self-efficacy strongly predicts both expressive performance and persistence. For vocal students, higher self-efficacy enhances artistic expressiveness and vocal control during stage performance.

Anxiety exerts a dual effect in music learning. Moderate anxiety can help maintain alertness and focus, thereby improving performance (Yerkes & Dodson, 1908). However, excessive anxiety leads to distraction, cognitive rigidity, and impaired vocal control (Kenny, 2011). In vocal contexts, the coexistence of facilitative and debilitative anxiety is particularly evident. While some students harness mild nervousness

to improve classroom performance, excessive anxiety during formal recitals often results in breakdowns. Thus, the effectiveness of vocal learning largely depends on students' Psychological Quality and their ability to regulate performance anxiety.

2.3 Limitations of Existing Research

Although international research on Psychological Quality, self-efficacy, and performance anxiety has advanced, significant gaps remain in the context of Chinese vocal education. Most studies focus on Western student populations, giving limited attention to the psychological characteristics and learning patterns of students in Asian cultural contexts (Papageorgi, Hallam, & Welch, 2007). Moreover, current research predominantly relies on quantitative surveys, with insufficient use of qualitative methods such as interviews or classroom observation, which constrains deeper understanding of Psychological Quality (Kenny, 2011). In addition, while Zhang Dajun's team has proposed a theoretical framework and measurement tools, these have not been widely applied or validated in music education. Therefore, integrating this indigenous framework with international findings is necessary to systematically examine the effects of Psychological Quality on vocal learning outcomes and to reveal the mediating role of performance anxiety. Such efforts can enrich the field of music education psychology and provide localized empirical evidence for vocal education in China.

3 Research Methods

3.1 Statistical Method

This study employed Structural Equation Modeling (SEM) as the primary statistical tool, with AMOS software used for data analysis. SEM allows for the simultaneous examination of complex relationships between observed and latent variables, making it suitable for testing both direct and indirect effects among Psychological Quality, performance anxiety, and learning outcomes. The visualization and rigorous statistical capabilities of AMOS further ensure the reliability and accuracy of the research findings.

3.2 Measurement Instruments

Data were collected via an online questionnaire including three core parts.

Psychological Quality was measured with the Brief College Students' Psychological Quality Questionnaire (Wang et al., 2017). It covers three dimensions—cognitive, personality, and adaptive factors—reflecting traits such as metacognition, confidence, and social adaptation. Sample items include: "I often know what I should and should not do" and "I am confident and appropriate in social situations." Prior studies showed high reliability ($\alpha > 0.80$).

Music Performance Anxiety (MPA) was assessed using the Kenny Music Performance Anxiety Inventory (K-MPAI) (Kenny, 2011). It measures physiological (e.g., rapid heartbeat), cognitive (e.g., fear of failure), and behavioral (e.g., avoidance) responses. Example items include: "I often feel nervous before a performance" and "I worry about making mistakes in front of an audience."

Learning Outcomes were evaluated with the Learning Outcomes Scale (리우닝, 2025), consisting of six dimensions: learning methods, engagement, experience, attitude, ability, and course satisfaction. Sample items include: "I developed a feasible study plan," "I actively participated in discussions," and "I am highly satisfied with my learning achievements." All dimensions demonstrated good reliability ($\alpha > 0.80$).

3.3 Data Collection

The online questionnaire was distributed to 120 undergraduate vocal music majors from five universities in China, with 100 valid responses obtained (valid response rate = 83.3%).

Sample characteristics were as follows: gender—42 males (42%) and 58 females (58%); year of study—28 freshmen (28%), 32 sophomores (32%), 25 juniors (25%), and 15 seniors (15%); vocal specialization—45 in bel canto (45%), 30 in traditional Chinese vocal music (30%), and 25 in popular singing (25%). Participants' ages ranged from 18 to 25 years ($M = 21.36$, $SD = 1.82$).

To control for common method variance (CMV), anonymity was ensured and some items were reverse-coded. Harman's single-factor test revealed that the first factor explained 22.3% of the variance, below the 40% threshold, indicating no significant CMV issue.

4 Date Results

4.1 Descriptive Statistics and Correlation Analysis

The descriptive statistics of the three core variables are presented in Table 1. The overall level of Psychological Quality among vocal music majors was moderately high ($M = 3.62$, $SD = 0.54$), their learning outcomes were relatively high ($M = 3.84$, $SD = 0.49$), and performance anxiety was at a moderate level ($M = 2.97$, $SD = 0.68$).

Correlation analysis results (Table 2) indicated the following:

- (1) Psychological Quality was significantly positively correlated with learning outcomes ($r = 0.56$, $p < 0.001$).
- (2) Psychological Quality was significantly negatively correlated with performance anxiety ($r = -0.42$, $p < 0.001$).
- (3) Performance anxiety was significantly negatively correlated with learning outcomes ($r = -0.47$, $p < 0.001$).

Table 1. Descriptive Statistics and Reliability/Validity Indicators of the Variables

Variable	Mean (M)	Standard Deviation (SD)	95% Confidence Interval	Cronbach's α	AVE
Psychological Quality	3.62	0.54	[3.51, 3.73]	0.892	0.623
Performance Anxiety	2.97	0.68	[2.83, 3.11]	0.901	0.589
Learning Outcomes	3.84	0.49	[3.74, 3.94]	0.876	0.594

Table 2. Results of Correlation and Path Analysis ($p < 0.001$)

	(1) Psychological Quality	(2) Performance Anxiety	(3) Learning Outcomes
(1) Psychological Quality	1	-0.42***	0.56***
(2) Performance Anxiety	-0.42***	1	-0.47***
(3) Learning Outcomes	0.56***	-0.47***	1

4.2 Model Fit Test

The proposed mediation model was tested for model fit. Results showed that all indices met acceptable standards (Byrne, 2013; Kline, 2010): GFI = 0.912, AGFI = 0.895, NFI = 0.903, IFI = 0.921, CFI = 0.918, RMSEA = 0.043 (90% CI [0.031, 0.055]), indicating that the model demonstrated a good fit to the data.

4.3 Structural Model Results

The standardized path coefficients of the structural model are presented in Table 3:

- (1) Psychological Quality significantly and positively predicted learning outcomes ($\beta = 0.48$, $p < 0.001$).
- (2) Psychological Quality significantly and negatively predicted performance anxiety ($\beta = -0.42$, $p < 0.001$).
- (3) Performance anxiety significantly and negatively predicted learning outcomes ($\beta = -0.31$, $p < 0.001$).

Table 3. Path Coefficients of the Structural Model

Path Relationship	Standardized Coefficient	Standard Error (S.E.)	p-value
Psychological Quality \rightarrow Learning Outcomes	0.48	0.062	<0.001
Psychological Quality \rightarrow Performance Anxiety	-0.42	0.058	<0.001
Performance Anxiety \rightarrow Learning Outcomes	-0.31	0.049	<0.001

4.4 Mediation Effect Test

The mediating effect of performance anxiety was examined using the bootstrap method (5,000 resamples, 95% CI). Results (Table 4) showed that the indirect effect of Psychological Quality on learning outcomes via performance anxiety was -0.130, with a 95% confidence

interval of [0.072, 0.201], excluding zero. This indicates a significant mediation effect. After including performance anxiety, the direct effect of Psychological Quality on learning outcomes remained significant ($\beta = 0.35$, $p < 0.001$), but its magnitude decreased compared to the direct effect alone ($\beta = 0.48$). This suggests that performance anxiety plays a partial mediating role between Psychological Quality and learning outcomes, accounting for 27.1% of the total effect (0.130/0.480).

Table 4. Results of Mediation Effect Test

Effect Type	Effect Value	95% Confidence Interval	Significant
Total Effect	0.480	[0.365, 0.595]	Yes
Direct Effect	0.350	[0.231, 0.469]	Yes
Indirect Effect	0.130	[0.072, 0.201]	Yes

5 Conclusion and Recommendations

5.1 Research Conclusions

This study tested the mediation model of Psychological Quality→Performance Anxiety→Learning Outcomes. Results showed that Psychological Quality positively predicted vocal music students' learning outcomes ($\beta = 0.48$, $p < 0.001$), with cognitive, personality, and adaptive factors jointly enhancing planning, persistence, and stress management. Psychological Quality negatively predicted performance anxiety ($\beta = -0.42$, $p < 0.001$), and performance anxiety partially mediated this relationship (indirect effect = 0.130, 95% CI [0.072, 0.201]). Differences were also observed by educational level: among undergraduates, Psychological Quality more strongly alleviated anxiety, while for graduate students, the adverse impact of anxiety on advanced learning abilities was more pronounced.

5.2 Practical Recommendations

Universities should adopt an integrated training model that emphasizes both skills and psychology. Music psychology and emotion regulation courses can be introduced; undergraduates may benefit from "tutoring + peer support," whereas graduate students could access academic counseling platforms. Faculty should embed psychological guidance and metacognitive strategies into teaching, while providing gradual, low-pressure performance settings. Students are encouraged to design individualized psychological training plans and engage in counseling and peer support, while families should focus on the learning process and provide emotional support through empathy and encouragement.

5.3 Research Limitations and Future Directions

This study had limitations, including a small sample ($n = 100$), a cross-sectional design that could not establish long-term causality, and the omission of moderating variables such as repertoire type. Future research should adopt longitudinal designs, expand sample size, and include more moderators. Combining quantitative analysis with qualitative methods such as interviews and classroom observation could also provide richer evidence for practical interventions.

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A Study on the Effects of Yangqin Music Education on College Students' Self-Efficacy

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Abstract: This study investigated the effects of Yangqin music education on university students' self-efficacy. A total of 100 students from Guangdong completed Kim A-Young's (1997) self-efficacy scale before and after the program. Statistical analyses revealed significant gains in confidence, self-regulation, and task preference. Improvements were greater among female students, music majors, and those with longer music experience. These findings indicate that Yangqin education not only develops artistic skills but also enhances psychological well-being, supporting its role in competence and mental health education in universities. The study confirms that self-efficacy is malleable and can be strengthened through traditional instrumental training.

Keywords: Yangqin Music Education; Self-Efficacy; University Students; Confidence; Self-Regulation

1 Introduction

1.1 Research Necessity and Purpose

This study investigates the role of Yangqin education in enhancing self-efficacy within higher education. Self-efficacy, a central construct in Social Cognitive Theory (Bandura, 1997), is crucial for goal setting, emotional regulation, and persistence. High levels foster resilience and motivation, while low levels are linked to anxiety and burnout (Luszczynska et al., 2020). Strengthening self-efficacy is therefore both theoretically and practically vital. Music education, especially instrumental training, enhances self-efficacy through mastery experiences, feedback, and emotional expression (Zelenak, 2024; Martínez-Castilla et al., 2022). Yet, most studies focus on Western instruments, with limited attention to Chinese traditional instruments. The Yangqin, a hammered dulcimer requiring rhythmic control, coordination, and expression, offers unique artistic, cultural, and psychological benefits, while ensemble performance fosters collaboration. This study examines whether Yangqin instruction can promote confidence, self-regulation, engagement, and cultural identity, positioning it as a culturally grounded intervention that integrates psychological support with cultural transmission. Supported by prior findings (Schiavio et al., 2021; Li & Zhang, 2022; Burton et al., 2020), this research addresses a critical gap in linking music education, self-efficacy, and cultural heritage.

1.2 Research Questions

Q1: To analyze differences in students' self-efficacy before and after Yangqin education.

Q2: To examine intervention effects on sub-factors (confidence, self-regulation, task preference).

Q3: To analyze gender-based differences.

Q4: To analyze differences by academic major.

Q5: To analyze differences by prior music experience.

Through these questions, the study seeks to show that traditional music education can substantively impact learners' psychological and emotional development.

2 Theoretical Background

2.1 Self-Efficacy

Self-efficacy, defined by Bandura (1997) within Social Cognitive Theory, refers to one's belief in the ability to accomplish tasks under challenge. It influences goal setting and persistence, with high levels linked to resilience and low levels to anxiety and poor outcomes (Usher & Pajares, 2018; Zhou et al., 2020). For university students, it is a strong predictor of academic achievement and well-being (Liem et al.,

2021).

Bandura (1997) identified four sources of efficacy—mastery, vicarious experience, verbal persuasion, and affective states. In Yangqin learning, these map onto practice, peer learning, feedback, and performance, shaping students' confidence. Pajares (2009) noted that efficacy is domain-specific, making Yangqin practice a suitable context for its development.

SDT (Deci & Ryan, 1985) emphasizes autonomy, competence, and relatedness as drivers of motivation and efficacy. Building on this, Kim (1997) created the General Self-Efficacy Scale, assessing confidence, self-regulation, and task preference, validated in higher education (Kim & Kim, 2022).

Together, SCT and SDT provide the framework for analyzing how Yangqin music education enhances self-efficacy.

2.2 Yangqin Music Education

The Yangqin, a traditional Chinese hammered dulcimer comparable to the Western santur, is a plucked string instrument that combines striking, plucking, and timbre control. Increasingly included in both specialized and general curricula in Chinese universities, the Yangqin functions not only in professional training but also in aesthetic education and psychological development.

Technically, Yangqin study cultivates rhythm, coordination, and concentration, while providing mastery experiences, peer learning, teacher feedback, and emotional regulation—factors closely tied to self-efficacy. From a psychological perspective, Yangqin education emphasizes emotional expression and self-awareness, supporting stress reduction and cognitive integration.

Universities promote Yangqin education through diverse formats: specialized technical courses (e.g., repertoire and chamber music), ensemble and integrated practice, cultural heritage and outreach activities, reflective aesthetic education, and ensemble-based training. Collectively, these approaches strengthen students' confidence, collaboration, and social self-efficacy, positioning the Yangqin as both an artistic and psychological resource in higher education.

3 Research Method

3.1 Research Participants

This study involved 100 undergraduates from Guangdong universities, balanced by gender, major, and academic year. All participated voluntarily with informed consent, and the study followed ethical standards. Guangdong was selected due to its strong music education system, established Yangqin programs, and diverse student population suitable for comparing majors and non-majors.

3.2 Research Design

A one-group pretest–posttest design was used. Kim's (1997) General Self-Efficacy Scale measured confidence, self-regulation, and task preference before and after an eight-week Yangqin program. Paired t-tests assessed pre–post differences, and two-way ANOVA examined effects of gender, major, and prior music experience. Expert consultation ensured reliability and validity.

To maintain internal validity, no control group was set, but participants refrained from other music training during the intervention. The same instructors, lesson plans, and feedback methods were used throughout.

3.3 Research Instruments

3.3.1 Yangqin Music Education Program

The Yangqin program lasted eight weeks (Weeks 2–7), with two 90-minute sessions each week. The curriculum was structured progressively, moving from basic skills to expressive performance and ensemble collaboration.

In the early stage (Weeks 2–3), students focused on basic performance techniques such as hand posture, striking methods, scales, arpeggios, and rhythm control. These exercises aimed to develop technical accuracy, coordination, and a sense of achievement, thereby strengthening initial confidence and willingness to engage in challenging tasks.

In the middle stage (Weeks 4–5), the emphasis shifted to musical expression. Students practiced interpreting simple melodies, ex-

ploring different performance styles, and managing emotional nuances within repertoire. This process encouraged autonomy, enhanced self-awareness, and promoted emotional regulation through expressive performance.

In the final stage (Weeks 6–7), students participated in ensemble practice, including small-group collaboration and recital preparation. Ensemble activities fostered cooperation, communication, and sensitivity to harmony, while public performance provided mastery experiences that built stage confidence, responsibility, and social self-efficacy.

Overall, the program was designed not only to improve technical skills but also to support psychological development, targeting the key components of self-efficacy: confidence, self-regulation, and task engagement.

3.3.2 Self-Efficacy Measurement Tool

This study used Kim A.Y.'s (1997) General Self-Efficacy Scale, consisting of 24 items across three sub-dimensions: confidence (7 items), self-regulation (12 items), and task preference (5 items). Items were rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating stronger self-efficacy. The scale, grounded in Social Cognitive Theory and Self-Determination Theory, has been widely validated in higher education research, demonstrating strong reliability (Cronbach's $\alpha = .86$; Song, 2018). For this study, it was translated and culturally adapted for Chinese students.

3.3.3 Data Analysis Method

Data were analyzed using SPSS 26.0 with descriptive statistics, paired-sample t-tests, and two-way ANOVA. Means and standard deviations of the three subdomains (confidence, self-regulation, task preference) were calculated for pre- and post-tests. Paired-sample t-tests tested overall changes in self-efficacy ($\alpha = .05$), while two-way ANOVA examined effects of gender, major, and music experience. The procedure involved recruiting 100 undergraduates (42 majors, 58 non-majors), obtaining consent, administering pre-tests, conducting Yangqin lessons as the intervention, and completing post-tests, after which all data were statistically analyzed.

4 Research Results

4.1 Basic Information

This study involved 100 undergraduates from Guangdong universities, including 47 males and 53 females. Among them, 42 were music majors and 58 were non-majors. Regarding music learning experience, 20 had none, 25 had less than one year, 30 had one to three years, and 25 had more than three years. This balanced distribution enhanced comparability across gender, major, and music experience, thereby strengthening the validity of subsequent analyses.

4.2 Comparison of Pre- and Post-Intervention Self-Efficacy in Yangqin Music Education

A paired-sample t-test showed that students' overall self-efficacy significantly improved after the intervention ($p < .05$). Factor-specific results further indicated significant gains in confidence, self-regulation, and task preference (<Table1>), confirming the positive effect of Yangqin education on students' self-efficacy.

Table 1. Self-Efficacy by Factor Before and After Yangqin Education

Independent Variable	Time	Mean (M)	Standard Deviation (SD)	Sample Size (N)
Confidence	Pre-test	3.39	0.58	100
Confidence	Post-test	4.13	0.52	100
Self-regulation Ability	Pre-test	3.43	0.56	100
Self-regulation Ability	Post-test	3.97	0.5	100
Preference for Task Challenge	Pre-test	3.45	0.5	100
Preference for Task Challenge	Post-test	4.11	0.5	100

As shown in< Table 1>, confidence, self-regulation, and task preference all improved significantly after the Yangqin intervention ($p < .05$), confirming its positive effect on self-efficacy.

4.3 Comparison of Differences in Self-Efficacy by Gender Before and After Yangqin Music Education

Gender differences in self-efficacy were examined using gender (male, female) and time (pre, post) as independent variables and self-efficacy as the dependent variable. Descriptive statistics and two-way ANOVA tested whether levels differed by gender and across time.

Table 2. Differences in Self-Efficacy Before and After Yangqin Music Education by Gender

Gender	Time	Mean (M)	Standard Deviation (SD)	N
Male	Pre-test	3.40	0.27	47
	Post-test	3.80	0.26	47
Female	Pre-test	3.39	0.29	53
	Post-test	4.11	0.28	53
Total	Pre-test	3.42	0.28	100
	Post-test	4.07	0.29	100

Gender differences in self-efficacy were examined using gender (male, female) and time (pre, post) as independent variables. As shown in <Table 2>, both males and females significantly improved after the intervention, with females showing greater gains. Two-way ANOVA further confirmed significant main effects of gender and pre/post intervention, as well as their interaction (F values = 16.91, 140.69, and 4.15, respectively; all $p < .05$).

4.4 Differences in Self-Efficacy Between Music Majors and Non-Majors

This section compares self-efficacy changes between music majors and non-majors. Independent variables were major (music, non-music) and time (pre, post), with self-efficacy as the dependent variable. Descriptive statistics and two-way ANOVA tested major-based differences before and after the intervention.

Table 3. Self-Efficacy by Academic Major Background (Pretest vs. Posttest)

Independent Variable	Mean	Standard Deviation	N
Music Major (Pre-test)	3.62	0.46	42
Music Major (Post-test)	4.12	0.44	42
Non-Music Major (Pre-test)	3.59	0.43	58
Non-Music Major (Post-test)	3.91	0.42	58

As shown in <Table 3>, self-efficacy increased significantly for both groups, but gains were larger for music majors (3.62 → 4.12) compared with non-majors (3.59 → 3.91). Two-way ANOVA confirmed significant main effects of major and pre/post intervention, as well as a significant interaction (F = 11.31, 122.61, and 3.45; all $p < .05$), indicating that music majors benefited more from the Yangqin program.

4.5 Self-Efficacy Differences by Music Experience (Pre–Post Intervention)

Self-efficacy was analyzed by music learning experience (none, <1 year, 1–3 years, >3 years) before and after the intervention.

Table 4. Self-Efficacy by Music Learning Experience (Pre–Post)

Independent Variable	Time	Mean	Standard Deviation	Number of Cases
None	Pre-test	3.60	0.48	20
	Post-test	3.85	0.50	20
Less than 1 year	Pre-test	3.70	0.52	25
	Post-test	3.95	0.48	25
1–3 years	Pre-test	3.80	0.50	30
	Post-test	4.10	0.47	30
More than 3 years	Pre-test	3.95	0.45	25
	Post-test	4.30	0.44	25

As shown in <Table 4>, all groups improved in self-efficacy after the intervention. Gains were modest among students with little or no

prior experience, but strongest among those with more than three years of training (3.95 → 4.30). Two-way ANOVA further confirmed a significant main effect of time and a significant interaction between music experience and intervention ($F = 9.12$ and 3.01 , respectively; both $p < .05$), indicating that longer music experience amplified the benefits of Yangqin education.

5 Conclusion and Suggestions

This study examined the impact of Yangqin education on 100 Guangdong university students by comparing pre- and post-intervention scores. Results showed a significant increase in self-efficacy (3.42 → 4.07, $p < .05$), consistent with Bandura's (1997) theory and prior findings on the role of mastery experiences and feedback (Zelenak, 2024; Burton et al., 2020). All three sub-dimensions—confidence, self-regulation, and task preference—improved, with the largest gain in task preference, reflecting Kim's (1997) scale and the regulatory benefits noted by Martínez-Castilla et al. (2022).

Gender analysis revealed greater gains among female students (Schiavio et al., 2021; Zhou et al., 2020). Music majors improved more than non-majors, aligning with Li and Zhang (2022) and Pajares's (2009) domain-specific self-efficacy. Longer music experience also yielded greater gains, supporting Zelenak's (2024) claim of cumulative effects.

Overall, Yangqin education enhanced confidence, self-regulation, task engagement, and cultural identity, highlighting its psychological and cultural value. However, the study was limited to a short-term intervention and a single instrument; future research should adopt longitudinal designs and broader samples to clarify mechanisms.

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The impact and regulatory mechanism of educational psychology on teacher burnout

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Abstract: Teacher burnout has become an important psychological obstacle to improving the quality of education. Educational psychology provides theoretical support for its mechanism analysis and intervention path. This article analyzes the role of educational psychology in teacher burnout from four dimensions: emotion regulation, achievement motivation, role cognition and teaching effectiveness. On this basis, it proposes the regulatory mechanism of emotion regulation system construction, motivation reinforcement, role cognition optimization and efficacy reconstruction. The purpose of this study is to provide scientific paths and practical guidance for alleviating teacher psychological exhaustion, improving professional happiness and promoting the healthy and sustainable development of the teaching staff.

Keywords: Educational Psychology; Teacher Burnout; Emotion Regulation

Introduction

In the context of the continuous deepening of educational reform and the continuous increase in teacher work pressure, burnout has gradually become a common psychological dilemma among teachers, mainly manifested in emotional exhaustion, work indifference and reduced personal sense of achievement. Educational psychology is an important science that studies the psychological and behavioral changes of individuals in the process of educational activities. It has multiple functions such as regulating emotions, strengthening motivation, reconstructing cognition and improving effectiveness^[1]. This study attempts to use the theoretical framework of educational psychology as a basis to deeply analyze its influencing mechanism in the process of teacher burnout and explore feasible intervention paths to achieve the effective integration of psychological support and educational practice.

1. Overview of educational psychology

Educational psychology is a discipline that studies the psychological activities and development laws of individuals in the educational process. It involves many aspects such as learning motivation, cognitive structure, emotional regulation and behavior management. Its core is to reveal the psychological mechanisms of both teachers and students in the teaching interaction process to optimize educational strategies and promote individual development. For teachers, while providing a scientific basis for teaching methods, educational psychology also profoundly affects teachers' self-cognition, emotional management and professional behavior adjustment. Educational psychology theory can effectively help teachers understand their own psychological state and the causes of professional burnout. It is a multi-complex and stressful environment in the current educational ecology, promoting scientific and systematic coping strategies, and improving professional adaptability and psychological resilience^[2].

2. The impact of educational psychology on teacher burnout

2.1 Lack of emotion regulation leads to continuous overdraft of psychological energy

The teaching profession is essentially a highly emotional labor. In the multiple scenarios of student management, home-school communication and teaching pressure, the strength of individual emotion regulation ability has become a key factor affecting mental health. Teachers lack theoretical guidance and practical training in educational psychology on emotional awareness, emotional expression and regulation. Negative emotions are easily accumulated and cannot be effectively vented, which leads to emotional exhaustion and decreased psychological energy. Studies have shown that teachers who lack the ability to regulate emotions are more likely to be anxious, irritable and powerless, and their job satisfaction and commitment are significantly reduced, which eventually leads to professional burnout. If educational psychol-

ogy cannot be internalized as a teacher's daily emotional management strategy, then their cognitive resources and psychological carrying capacity will be quickly depleted under the high pressure of teaching.

2.2 Achievement motivation deviation weakens the sense of teaching commitment and achievement

Achievement motivation is a core psychological driving force that motivates teachers to maintain their enthusiasm for teaching and continuous input. However, when external evaluation criteria in educational situations overemphasize quantitative performance (such as enrollment rates and assessment rankings), teachers' motivation systems will shift from internal drive to external control, and teachers will lose interest in teaching and mission identification. This motivation shift not only weakens teachers' enthusiasm for classroom input, but also makes teachers rely on external feedback for the source of their sense of achievement. Once the feedback is not good, it is easy to induce self-doubt and career denial. The research focus of educational psychology is on "goal-oriented theory, etc." and "cognitive regulation of motivation." If these theories are not effectively applied in the professional growth of teachers, the structure of their achievement system may be unbalanced, and long-term work in a state of low sense of value and low motivation will aggravate professional burnout.

2.3 Cognitive conflict in teacher roles leads to value imbalance

There are many role attributes of the teaching profession: it is not only a transmitter of knowledge, but also a guide for students, a class manager, and a bridge between home and school. When teachers face role ambiguity and expectation conflicts in their actual work, such as the tension between management roles and education roles, conflicts between student expectations and administrative requirements, etc., cognitive imbalance is easy to occur. Without the support of the role cognition theory of educational psychology, it is difficult for teachers to construct a clear self-role positioning and thus fall into the dilemma of confused values, self-identity crisis and loss of professional significance. Teachers who are in this cognitive conflict for a long time are more likely to become burnout and confused about their work, thereby weakening their dedication and creativity to the teaching position^[3].

2.4 Low teaching self-efficacy weakens professional confidence reserves

Teaching self-efficacy, as a teacher's perception of their ability to complete teaching tasks and solve educational problems, is the core psychological basis for the formation of teachers' professional confidence. If teachers often encounter daily teaching difficulties such as cold student feedback, failed teaching innovation, and difficult classroom control, and lack the guidance and support of the "self-efficacy construction" theory of educational psychology, it is easy to cause self-denial and loss of professional confidence. This low sense of efficiency restricts the motivation of teachers to continue to try and develop, causing teachers to gradually fall into a vicious circle between ability doubt and professional anxiety.

3 The regulatory mechanism of educational psychology on teacher burnout

3.1 Establish a systematic emotion regulation system to enhance psychological resilience

In view of the fact that teachers' psychological energy is overdrawn due to the lack of an effective emotion regulation mechanism during the teaching process, schools should build a systematic emotion support system and other institutional and practical operation levels based on the emotion regulation theory of educational psychology to enhance teachers' psychological resilience. On the one hand, schools can establish psychological counseling rooms for teachers and regularly conduct group counseling courses such as emotional cognitive reconstruction training and stress coping skills training, mindfulness meditation and other workshops led by professional psychological counselors to help teachers perceive and accept their own emotions at the cognitive level and grasp emotional expression and guidance methods at the behavioral level; on the other hand, schools should establish "psychological rest mechanisms, etc." to reasonably regulate teachers' workload during high-pressure periods (such as the end of the semester and before teaching and research evaluations), and set up "psychological adjustment days" or "soul care periods" to give teachers a short-term recovery space away from stress sources.

3.2 Strengthening the internal achievement-driven path to reshape the sense of teaching value

In response to the phenomenon that teachers lose their professional commitment and sense of achievement due to the external control deviation of achievement motivation, schools should reconstruct the internal driving structure of the teacher achievement system based on the “motivation attribution theory, etc.” and “self-determination theory, etc.” of educational psychology^[4]. In practice, schools can introduce “experimental projects of autonomous teaching design” to encourage teachers to create personalized teaching plans based on the actual situation of students, and give them periodic demonstrations and feedback from peers, thereby improving their autonomy, competence and sense of belonging in the teaching process. At the same time, the construction of a teacher incentive mechanism based on process outcome evaluation is no longer solely based on admission rates or evaluation indicators, but requires strengthening teaching reflection, curriculum development, etc. Non-quantitative indicators such as recognition of educational innovation stimulate teachers’ inherent desire to explore teaching content and methods.

3.3 Optimize the cognitive structure of teachers’ roles to alleviate psychological role conflicts

Schools should use the “role conflict theory” and “social cognitive reconstruction model” of educational psychology to conduct research and help teachers establish clear and rational role positioning to avoid burnout caused by value imbalance. First, schools need to organize “role cognition clarification training” to guide teachers to clarify the boundaries between teaching responsibilities and educating responsibilities, administrative tasks and academic growth, and clarify the “controllable-uncontrollable” role content to reduce ineffective psychological burdens. Second, carry out “multi-role situation simulation workshops” to enable teachers to feel the psychological expectations from parents, students, class teachers and teaching and research staff from different perspectives through case deduction and situational role play, which promotes the recognition and coordination of other people’s role expectations. In practice, schools can also develop “role load perception tools” to assist teachers in recording specific role tasks completed within a week, and carry out structured reflection and work adjustments based on this. In order to better promote self-integration, schools should create a “professional identity co-construction community” to encourage teachers to conduct in-depth discussions and peer support around core issues such as “What is a contemporary teacher” and “What kind of teacher do I want to be” to enhance their internal sense of identity of their professional identity.

3.4 Improve the cognitive perception of teaching effectiveness and rebuild professional competence beliefs

In response to the phenomenon that teachers lose their professional confidence due to low self-efficacy, schools should systematically rebuild teachers’ positive cognitive evaluation of their own teaching abilities based on Bandura’s “self-efficacy theory, etc.” In practical operations, schools can build an “empirical teaching observation system”; organize teachers to participate in open classes of the same grade and different stages to observe each other, supplemented by standardized feedback tools. For example, through the “Teaching Behavior Detailed Observation Form”, teachers can draw useful reference information from excellent practices in the industry to enhance their experience as effectiveness role models. Further promote the “progressive success experience plan” to split the complex teaching tasks into progressive goals, such as first completing a differentiated teaching attempt, then conducting classroom design with student participation, gradually accumulating successful experience, and reconstructing self-efficacy beliefs. In platform construction, schools can introduce “teacher professional growth archive system and other content” to record teachers’ teaching achievements, reflection logs, student feedback and training processes, etc., allowing teachers to intuitively track their own growth trajectory and promote the coherence and stability of ability cognition.

Conclusion

Teacher occupational burnout does not come from a single external pressure, but is a complex product of multiple psychological mechanisms that have been accumulated for a long time. While revealing deep-seated causes such as lack of emotional regulation, imbalanced motivation, role conflict and lack of efficacy, educational psychology also provides us with a set of systematic regulatory mechanisms and intervention strategies. Teachers can achieve the transformation from “exhaustion state” to “active competence” state by building a positive psychological regulation system, enhancing internal drive construction, optimizing role positioning, and reconstructing teaching beliefs. In

the future, education managers and researchers should further promote the implementation of educational psychology intervention methods in practice, build a normalized psychological support system, and lay a solid foundation for teachers' physical and mental health and education quality assurance.

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An analysis of the teaching path of digital media art in colleges and universities under the background of digital technology empowerment

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Abstract: With the rapid progress of digital technology, the teaching of digital media art in colleges and universities urgently needs to carry out corresponding innovative measures to meet the situation of the times, the teaching concept and mode lag behind, the curriculum system and the development of digital technology deviate, and the digital literacy and practical skills of the teaching staff are insufficient, which restricts the improvement of teaching quality and students' ability. Relying on these practices, it is intended to create a new model of digital media art teaching that is more efficient, innovative and in line with the future trend.

Keywords: Digital Technology; University; Digital Media Arts; Pedagogical Innovation; Teaching Resources

Introduction

Following the wave of digitalization, as a new interdisciplinary discipline - digital media arts, the teaching mode and content urgently need to keep up with the pace of the times, and the usual teaching concepts and models are often difficult to meet the requirements of the rapid development of digital technology, resulting in students facing the separation of knowledge and skills in actual work.

1 The necessity of digital technology to empower digital media art teaching in colleges and universities

In the multidisciplinary context of digital media art, technology is not only a creative tool, but also an important carrier of artistic expression - from 3D modeling, motion graphics, to virtual reality and interactive design, cutting-edge technology plays a direct and decisive role in the presentation form and communication efficiency of works. As the main platform for talent creation, if colleges and universities still rely on the traditional teaching system, it will make students' skills disconnected from industry needs: now the digital art industry has entered a new stage of "technology leads creativity", for film and television post-production, game development, new media installations and other fields, the requirements for real-time rendering, AI-assisted design, cross-media interaction and other technical capabilities are becoming more and more demanding^[1].

2 The current dilemma faced by digital media art teaching in colleges and universities

2.1 Teaching concepts and models lag behind

In the field of digital media art teaching in colleges and universities today, the old-fashioned teaching concepts and models still control the dominance, seriously unable to keep up with the pace of the development of the times, some teachers still adhere to the concept of knowledge transfer as the core, in the classroom generally use indoctrination methods, knowledge is passively accepted by students, lack of opportunities for active exploration and innovation, in the environment of this model, students' learning initiative and creativity are greatly inhibited, in some theoretical courses, teachers invest a lot of time to explain concepts, principles, It almost does not lead students to connect theory with practical cases, resulting in students having the ability to memorize knowledge points, but unable to apply these contents in actual creation^[2].

2.2 The curriculum system is disconnected from the development of digital technology

With the rapid evolution of science and technology, in the field of digital media art, all kinds of new technologies and new applications

continue to appear, such as artificial intelligence, like virtual reality, like augmented reality, the curriculum system of digital media art in colleges and universities has not been able to quickly keep up with the development trend of technology, showing a prominent decoupling phenomenon, the curriculum knowledge is outdated and backward, some colleges and universities are still using textbooks and syllabi from many years ago, the knowledge and cases in it can not show the latest development trend in the field of digital media art, in some animation production courses, The focus is still on the teaching of traditional two-dimensional animation production techniques, but the content of the current popular three-dimensional animation technology, animation special effects synthesis and other aspects is limited, causing students to have obstacles in meeting the industry's demand for new animation talents after graduation^[3].

2.3 The digital literacy and practical ability of the teaching staff are insufficient

The quality of teaching is directly affected by the quality of the teaching staff, in the teaching process of digital media art courses in colleges and universities, there are obvious shortcomings in the level of digital literacy and practical ability, some teachers need to further improve their digital literacy, the progress of digital media art depends on the continuous iteration of digital technology, teachers should have a good comprehensive ability of digital literacy, in order to better guide students to grasp the latest technical knowledge. In fact, some teachers lack the understanding of emerging digital technologies, lack the motivation for active learning and exploration, and have difficulties in integrating the latest digital technologies into the curriculum content.

3 The path of digital technology to empower digital media art teaching in colleges and universities

3.1 Innovate teaching concepts and build a new teaching paradigm of digital empowerment

In view of the demand for innovative talents in the digital age, the traditional teacher-centered one-way teaching model is difficult to adapt to the times, and it is necessary to transition to a new teaching system with students as the main body and technology as the connection. use virtual reality (VR), augmented reality (AR) and other technologies to build immersive learning situations, and guide students to experience the integration of art and technology in the virtual creation world; Relying on artificial intelligence (AI)-assisted teaching systems to achieve personalized learning path directional push, and implementing precise guidance according to each student's creative style and technical shortcomings, it is necessary to build the concept of interdisciplinary integration, break down the barriers between art and technology, theory and practice, advocate students to open up new categories of artistic expression with the help of digital technology, and help the teaching goal transition from "skill training" to "innovative thinking shaping", so that teachers can transform from knowledge teachers to creative guides and technical collaborators, and finally build a "technology stimulates creation, Creation feeds back technological progress"^[4].

3.2 Optimize the curriculum system and integrate cutting-edge digital technologies and applications

Digital technology in the teaching of digital media art in colleges and universities, optimizing the curriculum system is the key support carrier, we must take the development of the industry and technology replacement as the guide, eliminate the aging of technical content in traditional courses, the phenomenon of disconnection between theory and practice, and create a curriculum system that combines cutting-edge technology with artistic creation and application scenarios. Modular courses such as "Principles of AI Art Creation" and "Virtual Digital Human Design" either replace or upgrade traditional software operation courses. From the level of system construction, strengthen the progressive training system of "basic theory-technical training-project practice", the lower grades focus on the foundation of digital technology and artistic thinking training, and the senior grades rely on interdisciplinary project courses (such as integrated game development, digital exhibitions, new media advertising, etc.) to improve the comprehensive application ability. The technical certification system represented by Blender Advanced Certification has been added to the credit system, so that the course content is seamlessly connected with the needs of the industry, and the technical skills mastered by students are always at the forefront of the industry.

3.3 Strengthen the construction of teachers and improve their digital literacy and cross-border capabilities

If the construction of teachers is strengthened, they can start from the two dimensions of "technical ability improvement" and

“cross-border vision expansion” to create a multi-level training pattern, and a solid digital technology training mechanism should be built, so that teachers can fully master cutting-edge technologies such as AI creation tools, immersive media technology, and cross-platform development through win-win school-enterprise cooperation and special training at home and abroad. Eliminate the disconnection of teaching content due to technical cognitive delay. Focus on the shaping of cross-border capabilities, support art teachers to carry out joint teaching and research practice with teachers in computer science, design, communication and other fields, and use means such as forming interdisciplinary teaching groups and collaborative development of courses to break down disciplinary boundaries. It is necessary to improve teacher incentive methods, add digital teaching innovation achievements to the professional title evaluation and performance appraisal system, and promote teachers to take the initiative to develop new ways to combine technology and teaching, and finally create a compound teacher group that not only understands the laws of artistic creation, but is also proficient in digital technology practice, and has interdisciplinary insights^[5].

3.4 Build a high-quality teaching resource sharing platform to empower the whole process of teaching

The platform must integrate multiple resources such as cross-school high-quality courses, industry cutting-edge cases, virtual simulation projects, software tool libraries, etc., and use cloud storage, big data analysis and other technologies to complete intelligent push to adapt to the needs of various types of teaching scenarios: students can use the platform to obtain preview materials, industry real-time dynamic videos, etc., master the use of digital tools in advance; Teachers can use the platform material library to implement case teaching and virtual training, and use real-time screen sharing to complete cross-class and cross-college joint creation guidance; The platform can present work display space, online mutual evaluation function modules and extended learning-related resources, achieving a closed link of “preview-teaching-practice-feedback-expansion”.

3.5 Innovate the teaching evaluation mechanism, focusing on the assessment of digital literacy and innovation ability

In the dimension of evaluation content, it is not only focused on students’ mastery of digital media technology, but also needs to focus on the digital literacy of innovative application of digital tools, data information screening and integration, cross-media narrative, etc., as well as innovative literacy such as creative planning, program improvement, and problem response. The evaluation mode should integrate procedural evaluation and final evaluation: in the process, the learning management system is used to track students’ digital tool use records, team collaboration logs, creative draft updates and other data, and the specific trajectory of their learning is reviewed in real time. The final evaluation goes beyond the scope of a single work scoring, introducing multiple dimensions such as virtual exhibition hall display, online review by industry experts, and feedback from user experience, and comprehensively considers the complexity of the work’s technical achievement, creative uniqueness, and social application value^[6].

Conclusion

In short, digital technology empowers the teaching of digital media art in colleges and universities, not only to realize the innovation of the traditional teaching model, but also to the forward-looking planning of the future talent cultivation model, based on the innovative teaching concept, optimize the curriculum system, strengthen the teaching team, build a resource sharing hub and innovate the evaluation model, which can effectively improve the quality of teaching, improve students’ digital literacy and innovative talents, which is not only conducive to students to more effectively adapt to the requirements of the future society, but also lays a solid foundation for the long-term development of digital media art education in colleges and universities. With the continuous development of digital technology, there is a certain reason to believe that digital media art teaching in colleges and universities will move towards a broader and more dynamic future.

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A Comparative Study of Chinese and Western Vocal Music Education: Insights from a Cross-Cultural Learning Experience

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Abstract: This paper examines the key differences between Chinese and Western vocal music education through the lens of a student who has experienced both systems. Drawing from firsthand learning experiences in China and the United States, the study compares teaching philosophies, curriculum designs, language training methods, and stage performance approaches. The Chinese model emphasizes technical precision through imitation and teacher guidance, while the Western approach focuses on scientific foundations, creative expression, and student autonomy. These fundamental differences significantly impact students' skill development, artistic identity, and performance confidence. The analysis offers valuable insights for vocal educators and students navigating cross-cultural music education, suggesting potential ways to integrate the strengths of both systems.

Keywords: Vocal Pedagogy; Cross-Cultural Education; Teaching Methods; Performance Training; Comparative Study

1 Introduction

With the continuous advancement of globalization, international education exchanges have become increasingly frequent (Smith, 2021), leading to significant developments in cross-cultural music education. In vocal pedagogy, distinct differences have emerged between Chinese and Western approaches, particularly in teaching concepts, curriculum design, and performance training (Wu Jing 2025). These differences stem from unique historical and cultural traditions, resulting in varied impacts on students' learning experiences and artistic development (Taylor, 2021).

While existing research has explored these differences from institutional perspectives, few studies have examined them through students' firsthand experiences (Harris, 2023). This gap highlights the need for comparative analysis based on actual learning experiences in both systems. By investigating these differences, this study aims to provide valuable insights into how each approach shapes vocal music education and student development.

2 Comparison of Teaching Concepts in Chinese and American Vocal Music Education

2.1 Traditional Chinese teaching concept: Emphasis on experience transmission and imitation

In China's vocal music education system, traditional teaching mostly adopts the "one-on-one" individual guidance model, emphasizing the teacher's experience transmission and students' imitation learning. This teaching method has certain effectiveness in the basic skill training stage, especially in aspects such as vocalization and pronunciation, which can help students quickly establish basic abilities. However, this "master-learner" teaching model also exposes many problems. For instance, in the classroom, corrections are often made based on the teacher's auditory judgment, lacking scientific support from vocal anatomy, acoustics principles, etc., and individual differences are also easily overlooked.

Scholar Wang Dan (2020) pointed out: "In terms of course design, Chinese vocal music education places more emphasis on skill training, but lacks systematicity in the teaching of basic vocal theory, anatomy, and other scientific content." This viewpoint has been confirmed in actual teaching. Many students rely heavily on the guidance of teachers for a long time and have difficulty independently identifying and regulating their own voice problems. This "experience-oriented" teaching concept, to a certain extent, restricts the development of students' autonomous learning and voice cognition.

2.2 American teaching philosophy: The combination of scientificity and student-centeredness

In contrast, the vocal education philosophy in the United States places greater emphasis on scientificity and student autonomy. Based on the traditional one-on-one vocal lessons, the teaching content is usually supplemented with “studio class” and other collective course forms, allowing students to enhance their self-awareness and critical thinking skills through taking turns to sing and mutual evaluation and feedback. This teaching environment encourages open communication and pays attention to the expressiveness and artistry during the learning process.

Furthermore, the vocal music courses offered by American universities are more comprehensive, covering various aspects such as music pedagogy, language pronunciation, stage movement training, and opera production, thus forming a cross-disciplinary teaching system. As vocal music education scholar Patricia Caicedo (2019) stated:

“Vocal pedagogy should not be limited to the development of vocal skills, but must integrate anatomy, acoustics, phonetics, performance psychology, and artistic expression in a holistic and student-centered manner.”

——Caicedo, P. (2019). Vocal Pedagogy in the 21st Century. *Music Educators Journal*.

This viewpoint clearly states that in the 21st century, vocal music education should be based on a multi-disciplinary approach and construct a systematic teaching framework centered on students. Under this concept, students are not only encouraged to explore the “scientific basis” behind sounds, but are also given the freedom to express themselves and create art. This “from the inside out” teaching approach helps to stimulate students’ learning initiative and the development of their individual vocal characteristics.

3 Structural Differences between Chinese and American Vocal Performance Courses

3.1 Differences in Course Objectives

In terms of setting the course objectives, Chinese vocal performance courses usually focus on outcome-oriented approaches, with relatively simple goals. The courses typically revolve around the rehearsal of a certain opera excerpt and end with a stage performance as the key teaching point. Such courses usually emphasize the completeness and standardization of the completed work and present a typical “performance showcase” teaching philosophy, focusing on implementing each student’s role tasks and completing the performance project (Yu 2018).

In contrast, American performance courses place greater emphasis on the learning process itself and emphasize the process-oriented teaching philosophy. In the teaching process, students not only participate in the entire process of character construction but are also encouraged to develop their own expression methods based on their own experiences and understanding. This approach emphasizes exploration and creativity, and emphasizes that “performance” is not only the end point of stage presentation but also a process of self-expression and internal awareness (Kolb 2015; Schechner 2013).

3.2 Comparison of Teaching Methods

In terms of teaching implementation, Chinese classrooms generally adopt a teacher-led teaching method. Teachers are responsible for arranging all movements, positioning, emotional directions, etc., while students mainly rehearse around these “pre-determined plans”. Although this approach is conducive to quickly improving the overall rehearsal efficiency, it is often criticized for neglecting students’ individual feelings and the space for understanding their roles, and the teaching process tends to become overly uniform in form (Yu 2018).

In contrast, American performance teaching places greater emphasis on the awakening of perception and the internal stimulation of emotions, and often employs methods such as experiential learning and somatic practice. Teachers guide students to evoke inner feelings through practices such as meditation, body scanning, and improvisation with music, in order to enhance their awareness of the psychological and physical states of the characters (Lindqvist and Costas 2010); Batson and Wilson 2014; (Schechner 2013). Such perceptual training through the use of the body helps students achieve the integration of “self” and “role” in their performances, and is in line with the “intrinsically motivated creation” emphasized in current interdisciplinary performance research (Schechner 2013).

3.3 Evaluation Methods and Classroom Atmosphere

In the evaluation system, Chinese courses usually consider the performance results as the core for scoring, with grades directly related to whether the performance was completed successfully and whether it met the standards of the stage. This evaluation model emphasizes the “correctness” of the results, while providing relatively less feedback on the emotional investment during the performance, the understanding of the role, and the independent exploration process.

In the United States, the classroom evaluation system is more open. Besides assessing students’ singing skills and completion degree, it also focuses on their depth of understanding of the role, reflective ability, and expression of personal style. The evaluation criteria are also more multi-dimensional, emphasizing whether students can establish “psychological authenticity” in the role and demonstrate critical and creative thinking paths (Kolb 2015;) Schechner 2013; (Yu 2018)

4 Differences between Language Teaching and Vocal Training

Language is an indispensable artistic element in vocal performances. Different language systems not only affect the position of the mouth during singing and the tone quality of the voice, but also directly relate to the style and emotional expression of the work.

4.1 Differences in language course settings

In traditional Chinese vocal music education, the focus of language training usually lies in the articulation norms of “Mandarin” and “ethnic languages”, emphasizing “correct pronunciation and clear articulation”. When dealing with foreign language works, the emphasis is often on “pronouncing the words accurately” and “imitating phonetic symbols”, rather than delving deeply into the pronunciation techniques and meaning of the language itself. In contrast, systematic language and pronunciation training courses are still relatively lacking.

In American universities, the vocal music program incorporates language learning as a core component. The course structure is more systematic, and there are often courses such as IPA (International Phonetic Alphabet) training, diction courses (language pronunciation courses), as well as expression courses related to opera languages like Italian, French, and German. In these courses, not only do students need to master the basic pronunciation rules, but they also need to understand how vowels, consonants, stress, and intonation variations in various languages affect the technical requirements and expressive effects of singing. For example, when it comes to French, the control of nasalized vowels (such as [ɑ̃] and [œ̃]) is particularly crucial. If the pronunciation rules cannot be accurately mastered, it will cause unclear pronunciation or loss of language coherence during singing. Through systematic IPA training, students can break down the vowels, consonants, and stress of each word, and mastering IPA enables them to better highlight the charm of the language and make the music more layered and fluid. As Robert T. Sataloff pointed out:

“Effective vocal performance requires not only technical precision but also accurate pronunciation and linguistic sensitivity, particularly in singing in foreign languages.”

— Sataloff, R. T. (2017). *Professional Voice: The Science and Art of Clinical Care*.

4.2 Comparison of Teaching Methods

There are also significant differences in teaching methods between Chinese and American language teaching. In Chinese classrooms, students learn foreign language works mainly by imitating phonetic symbols and listening to teacher’s readings. Discussions on word meanings, language sense, and context are relatively rare in the teaching process (Yu 2018). As a result, students taught by the same teacher handle and punctuate the works in the same way. In contrast, in the United States, before students perform foreign language works, they usually need to complete word-by-word translation and whole sentence translation, analyze grammar and emotional intentions, and combine these language-level understandings with performance practice. For example, in the “expression” course, teachers will correct pronunciation sentence by sentence, analyze the flow of intonation and rhythm changes, so that students can establish an understanding of the emotional aspects of the works during the language training stage (Ware 2008). This teaching method, which starts from language and runs through performance, not only improves the accuracy of language but also enables students to more easily enter the role state during the performance, achieving the unity of language and emotion.

4.3 The Influence of Language on Vocal Expression

The influence of language structure on vocal techniques is manifested in several aspects. For instance, the open vowels in Italian are more conducive to the production of bright resonance in singing, while the dense consonants in German place higher demands on articulation and breathing. The IPA training in the United States helps students grasp these language characteristics, thereby adjusting the tone, resonance, and punctuation according to the “vocal mechanism” of the language itself.

5 Comparison of Stage Class Design in Chinese and American Vocal Music Education

5.1 Differences in teaching objectives: Outcome-oriented vs Process-oriented

In Chinese universities, stage courses usually revolve around school choral performances or end-of-semester examinations, emphasizing the completion degree of the works and the standardization of techniques. Stage performances are often regarded as the terminal outcome of teaching, and the course design is more task-driven. Students’ performances are subject to more technical restrictions, and they cannot “be themselves” during the singing process. In singing, they mainly consider whether there are mistakes during the performance. The long-term learning environment causes students to become nervous and anxious when performing on stage, making it impossible for them to truly interpret the works well. Such course design also has certain limitations. In most music colleges in China, stage courses are usually regarded as a “performance showcase” type of course arrangement. Students’ stage performances often focus on the final exam performances at the end of the semester, with very few opportunities for daily rehearsals and frequent stage appearances. This performance not only fulfills the teaching task but also serves the functions of examination and scoring. The lack of systematic practical training makes students seriously lack experience in stage performance ability, on-the-spot adaptability, and character portrayal.

In contrast, American universities view stage performance courses as a process of training and creation, emphasizing students’ in-depth understanding and continuous exploration of the works. The course objectives place more emphasis on character construction, stage expression, and the improvement of psychological stability. For instance, courses such as Opera Workshop or Stagecraft not only focus on technical execution but also cultivate students’ creativity and artistic perception, considering the stage to be a “laboratory” rather than a “display window”.

Just as American vocal educator David Ostwald pointed out: “The stage is a laboratory, not a museum; opera workshops must be spaces for discovery, not preservation.” (Ostwald 2012)

5.2 Differences in Curriculum Structure and Teaching Methods

The curriculum structure of the Chinese stage performance course is mainly teacher-led. The teaching team consists of vocal music teachers and piano accompanists. The guidance content is mainly presented at the surface, such as stage positioning, costume design, and lighting arrangement. Systematic teaching in areas like psychological training, body expression, and script analysis is relatively lacking, and usually only one performance is arranged at the end of the term, with limited opportunities for students to perform on stage.

Compared with American universities, stage courses usually adopt a cross-disciplinary cooperative teaching method. Besides vocal guidance, they also have acting coaches, directors, body language experts and language instructors, who jointly provide comprehensive support to students. The courses often have ongoing public rehearsals and small-scale performances, such as weekly studio classes and opera scene performances, offering students frequent practical opportunities and enhancing their performance confidence and expression ability. Furthermore, project-based learning is quite common in American classrooms. Students are required to participate in various stages such as script analysis, rehearsal design, and prop production. Through this participatory training, students are no longer merely “performers”, but “co-creators” of the works.

In American stage courses, teachers encourage students to re-arrange and create classic opera segments. From the script to stage movement design and costume props, all have to be completed by themselves. Through this “project-based learning”, students not only deepen their understanding of the opera script structure, but also develop interdisciplinary collaboration and artistic expression skills.

6 Personal Reflection

As a student who has personally studied and practiced in both the Chinese and American teaching systems, I have gained a deeper understanding of the differences between Chinese and Western vocal music education. These differences not only pose challenges in adaptation but also facilitate profound transformations in professional comprehension and personal growth.

6.1 “Collision” of Teaching Concepts: From Imitation to Creation

In the traditional vocal learning experience, the training was conducted through the method of “teacher demonstration - student imitation”. This model effectively established basic vocal techniques at the beginner stage, but as the learning progressed, one would gradually realize that one’s development in aspects such as voice control, emotional expression, and understanding of roles was reaching a bottleneck. In American classrooms, teachers continuously guide scientific exploration of vocal production to understand one’s own voice characteristics and performance potential. From traditional education to encouraging education, it has stimulated scholars’ greater interest in vocal music, reduced certain anxiety and pressure, and enabled scholars to build a certain level of confidence in singing vocal music.

6.2 From “Stage = Examination” to “Stage = Learning Site”

In the traditional vocal learning experience, the stage is often regarded as a venue for showcasing teaching achievements and is directly linked to evaluation and assessment. This “stage = exam” concept makes performing on stage a highly stressful task, and students often view it as a challenge that must be “perfectly passed”. However, in the American teaching system, the stage is regarded as an important part of the process-oriented learning, and frequent small-scale performances (such as studio classes, opera workshops) provide students with opportunities to experiment and adjust. The stage is no longer the sole endpoint of evaluation, but has become a dynamic platform for continuous reflection and growth. This cognitive shift has greatly alleviated the author’s anxiety about the stage.

6.3 Suggestions for Optimizing the Teaching Mechanism: Gradual Graduation and Diverse Feedback

Based on the psychological changes and growth experiences during the learning process, the author believes that the “gradual stage-up” mechanism in vocal music teaching is particularly crucial. Through group presentations, classroom rehearsals, role-playing, etc., in an environment without intense evaluations, students’ familiarity with the stage can be gradually enhanced. At the same time, by combining multiple feedback mechanisms such as teacher-student evaluations, peer evaluations among students, and self-reflection, it not only helps to promptly identify and correct technical issues, but also enhances students’ sense of agency and confidence. This teaching design has positive significance for cultivating students’ performance confidence and artistic expression ability, and is particularly suitable for vocal music learners at the beginner and intermediate levels.

7 Conclusion

The differences between Chinese and Western vocal music education have significantly enhanced my skills, stage performance, and self-awareness. The encouraging educational approach in the United States has taught me how to incorporate more innovation and personalized expression while maintaining traditional techniques, which has laid a solid foundation for my future artistic development.

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Research on strategies to improve the information literacy of law students in the intelligent era

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Abstract: In the context of the continuous penetration of intelligent technology into the education field, improving the information literacy of law students has become a core link in promoting students' professional capacity building and academic innovation. At present, law students are facing multiple difficulties such as information screening, tool application, normative awareness and platform adaptation, which greatly restricts the career development of law students in the digital rule of law era. Focusing on the development characteristics of the intelligent era, based on the actual needs of law professional talent training, this article proposes four strategies such as constructing a text recognition mechanism and strengthening data tool training, systematically incorporating academic norms and optimizing platform course guidance, providing a feasible path and theoretical support for the reform of information literacy teaching in law education.

Keywords: Intelligent Era; Legal Education; Information Literacy; Teaching Strategies

Introduction

The rapid development of information technology is profoundly reshaping the ecology of higher education. Especially for law students who focus on accurate argumentation and data interpretation, information literacy is not only a basic skill but also related to future legal professional competence^[1]. Faced with the explosive growth of legal information and the accelerated use of intelligent tools, law students' ability to obtain, process and express information urgently needs to be systematically improved^[2]. However, the actual situation is that the screening is disordered, the means are backward and the norms are weakened. From the perspective of the intelligent era, this article systematically analyzes the core problems faced by information literacy and puts forward countermeasures and suggestions with practical teaching and technology integration.

1 Overview of information literacy of law students

The information literacy of law students refers to the comprehensive ability of students to identify, obtain, analyze, integrate, evaluate and properly use legal information in the process of learning and studying law, relying on the information technology environment. This literacy involves not only accurately understanding and judging legal texts, but also requires the ability to use technical means such as databases, intelligent retrieval systems and data analysis tools to deal with complex legal information. In particular, legal information in the context of intelligence has shown characteristics such as fragmentation, dataization, and platformization. The traditional model based on textbooks and paper laws has been difficult to adapt to the needs of professional growth. Information literacy is directly related to the depth of students' legal reasoning, their ability to follow academic norms, and their comprehensive competitiveness in the future legal profession^[3]. Therefore, its cultivation must be deeply integrated with the content, methods, and technical environment of legal education.

2 Dilemma of Improving Information Literacy of Law Students

2.1 The fuzzy information screening standards lead to deviations in the use of legal materials

The first dilemma currently faced by law students is that the information screening standards are unclear, and it is difficult to effectively distinguish whether legal materials are authoritative and applicable in a complex information environment. In the intelligent era, a large number of legal texts, case databases, policy documents, and media reports are highly intertwined. Beginners usually cannot judge what kind of information can be used for serious academic writing or legal reasoning^[4]. This fuzzy screening state has led some students to one-sidedly pursue information sources such as Baidu, Zhihu, and WeChat public accounts, while ignoring information sources such as legal databases,

official laws, and authoritative journals, resulting in distortions in students' literature citations and opinion construction.

2.2 The ability to apply legal data tools weakens the effectiveness of technical integration

In today's world where legal information platforms and AI-assisted search tools are prevalent, systems such as Peking University Law Treasure, HowNet Legal Database, Alpha, etc. have become important auxiliary tools in professional learning. However, some students find it difficult to effectively master the use and function expansion of such tools^[5]. Many law courses are still mainly taught by teachers, while neglecting the systematic cultivation of data retrieval, semantic search and classification indexing capabilities, resulting in students' lack of structured research capabilities when encountering complex cases. This lack of application capabilities makes it difficult to horizontally integrate information from multiple databases or judge the internal relationship between data, which in turn weakens the scope and depth of legal analysis^[6].

2.3 Weak awareness of academic norms leads to the misuse of legal information

In the process of legal education, some law students lack sufficient understanding of academic norms, which is specifically manifested in the messy citation format, unclear data sources, and frequent abuse of online information and even plagiarism. On the one hand, this reflects that the legal courses do not cover the use of literature and academic norms, and lack systematic explanation and training on the format of legal documents (such as GB/T 7714 standard, blue book citation format, etc.). On the other hand, students themselves do not pay enough attention to the legal use of information, and ignore the significance of citing authoritative legal documents and reviewing the source of information^[7].

2.4 The slow adaptation of intelligent platforms restricts the ability to obtain multiple resources

In the context of the rapid development of intelligent education environment, massive legal resources are migrating from paper media to digital platforms and intelligent tools, such as China Judgment Documents Network, LexisNexis, and AI-assisted compliance review system. However, the actual situation is that some students are still at the primary stage of understanding and using these intelligent platforms, which is specifically manifested in low login frequency, messy search paths, and low function utilization. This slow adaptation is due to the lack of intelligent platform operation training in the university course structure, and is also closely related to the lack of students' digital literacy and technology transfer capabilities. As a result, students are unable to fully mobilize multi-source information such as legal practice, cutting-edge research, and case data, which affects their understanding of legal issues from multiple perspectives and the broadening of their research horizons^[8].

3 Strategies for Improving Information Literacy for Law Students in the Intelligent Era

3.1 Constructing a Legal Text Identification Mechanism to Strengthen Information Screening Standards

In order to address the bias in the use of legal materials due to the ambiguity of information screening standards, it is necessary to construct a systematic legal text identification mechanism in the teaching practice. This mechanism should involve not only the identification training of various text types such as laws, judicial interpretations, precedents, legislative drafts, and academic documents, but also guide students to identify the authority level, timeliness, and applicable scenarios of legal information^[9]. Teachers should use the "case-driven plus comparative analysis" teaching method to display legal texts from multiple sources (for example, official laws and online reprinted versions) side by side, and guide students to analyze their differences in wording, citation sources, version updates, and legality, so as to establish a basic framework for judging the reliability of materials. Course design should include practical training in legal information screening. Through simulated topic research, students can access and screen legally relevant materials from multiple platforms within a limited timeframe. Teachers can then provide feedback through a standardized evaluation system, helping them develop a sound understanding of the logic behind information screening.

3.2 Strengthening Data Tool Embedded Training to Enhance Legal Integration

Given the limited technical skills of law students in the use of data tools, practical training in specialized tools should be integrated into the teaching process, shifting the use of legal data platforms from a “supportive” role to a core component of the course. During the teaching process, a “task-driven plus tool-based” teaching model can be adopted to guide students in applying Peking University Law Treasure, the subject databases of CNKI Law, the Faxin system, and other databases to conduct legal research, summarize similar cases, and track literature in real-world legal scenarios. For example, for the topic “Evolution of Marriage and Family Law,” a research task was designed covering the evolution of legal provisions, judicial precedents, and academic disputes. Students were then asked to utilize information tools in three databases to complete the development of relevant modules, ultimately producing a clearly structured and well-integrated report. In teaching, the application skills of each platform should be clarified, mainly including keyword optimization, Boolean logic operation and semantic search path setting. At the same time, AI auxiliary functions such as legal comparison and case recommendation should be used as guidance to help students grasp the process from “data retrieval” to “legal theory integration”.

3.3 Systematically integrate legal research norms to improve academic expression level

In view of the problems of weak academic norms awareness and the misuse of legal information, it is necessary for legal education to integrate research norms education as a systematic content into the entire process of course teaching and writing training, thereby promoting the professionalism and compliance of students’ information expression and academic citations^[10]. Teachers can incorporate “micro-courses on legal academic norms” into the basic course structure, focusing on legal citation formats (such as GB/T 7714 or blue book specifications), citation logic, reference management, and special training to avoid academic misconduct. In classroom practice, “literature adoption scoring standards” should be formulated in combination with actual paper writing tasks. The scoring standards are composed of three dimensions: the authority of the information source, the accuracy of the citation format, and the normativeness of the analysis logic. Giving students feedback on each item will encourage them to actively internalize the normative awareness. At the same time, it is recommended to use document management software (such as NoteExpress, Endnote, and Zotero) for practical instruction, so that students can develop standardized academic habits in information management.

3.4 Optimizing Intelligent Platform Course Guidance to Expand Information Access

Given students’ slow adaptation to intelligent platforms and limited resource access, the teaching guidance mechanism for intelligent platforms in law courses should be systematically optimized to expand from tool use to knowledge system construction. First, course design should focus on “platform-task integrated teaching,” integrating platform utilization with the core course content. For example, in a constitutional law course, students could be guided to search for cases related to “the protection of citizens’ basic rights” through the China Judgments Online website, analyze foreign comparative case law using LexisNexis, and compare legal regulations using Faxin. During instruction, teachers should clearly define the core functions and scope of application of each platform and avoid fragmented and ineffective platform use. Secondly, “information navigation task packages, etc.” should be introduced in practical teaching. Teachers should preset thematic tasks (such as “judging the compliance with data privacy” and “judging data privacy compliance issues”) to guide students to retrieve, integrate and analyze information on multiple platforms in stages, and develop cross-platform and cross-dimensional research capabilities.

Conclusion

Improving legal information literacy has become a key topic in the transformation of legal education in the intelligent era. Only by accurately identifying the weak links in students’ abilities and making full efforts in text identification, tool application, platform guidance and normative cultivation, can legal information literacy be truly improved. Higher legal education should deepen reforms in terms of curriculum system, teaching model and evaluation standards, actively connect with the trend of technological change, and guide students to grasp diverse and normative knowledge, critical information capabilities, etc., in order to cultivate legal talents with compound literacy for the construction of a digital rule of law society.

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Research on the Impact of Classroom Interaction on Academic Achievement in Chinese Language and Literature Major: Taking Learning Engagement as a Mediating Variable

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Abstract: This study aims to explore the impact of classroom interaction in Chinese language and literature majors on students' academic achievement, and to examine the mediating role of learning engagement. A questionnaire survey was conducted among 328 undergraduate students majoring in Chinese language and literature from six universities across the country, using the classroom interaction scale, learning engagement scale, and academic achievement questionnaire. The results showed that: (1) there was a significant positive correlation between classroom interaction, learning engagement, and academic achievement in Chinese language and literature majors; (2) classroom interaction not only directly and positively predicted academic achievement but also indirectly influenced it through the partial mediating effect of learning engagement. The study provides empirical evidence for optimizing classroom teaching models in Chinese language and literature majors and improving students' academic performance.

Keywords: Chinese Language and Literature Major; Classroom Interaction; Learning Engagement; Academic Achievement; Mediating Effect

1 Problem statement

As a core major in the field of humanities and social sciences, Chinese Language and Literature bears the important mission of inheriting excellent traditional Chinese culture and cultivating students' language and writing skills as well as humanistic literacy. However, the current classroom teaching of this major still suffers from the phenomenon of "teacher-led one-way teaching and passive student reception", resulting in insufficient student participation in classroom discussions and teacher-student interaction. This situation not only affects the quality of classroom teaching but also restricts the improvement of students' academic achievements (Pan, 2025)^[1].

Classroom interaction, as the core component of classroom teaching, is a process where teachers and students, as well as students among themselves, communicate and exchange knowledge and construct meaning through language and thinking. Existing research has shown that in fields such as education and psychology, high-quality classroom interaction can effectively stimulate students' interest in learning and promote knowledge internalization (Han, 2008)^[2]. However, given the particularities of the Chinese Language and Literature major—such as the course content being both literary and critical, requiring deepening understanding through text interpretation and emotional resonance—the mechanism by which classroom interaction affects academic achievement remains unclear.

Learning engagement, as a key indicator to measure students' learning status, encompasses three dimensions: cognitive engagement, emotional engagement, and behavioral engagement (Zang, 2022)^[3]. In Chinese language and literature classrooms, students participate in text analysis through teacher-student interaction (cognitive engagement), generate emotional resonance through peer discussion (emotional engagement), and reinforce learning behavior through classroom presentation (behavioral engagement). These engagement behaviors may serve as a bridge for classroom interaction to influence academic achievement. Based on this, this study proposes the following hypothesis:

H1: Classroom interaction in Chinese language and literature has a significant positive predictive effect on academic achievement;

H2: Classroom interaction in Chinese language and literature has a significant positive predictive effect on learning engagement;

H3: Learning engagement plays a mediating role between classroom interaction and academic achievement in Chinese language and literature majors.

2 Research methods

2.1 Research subjects

Using convenient sampling, undergraduate students majoring in Chinese Language and Literature from 6 universities (including comprehensive universities and teacher-training colleges) across the country were selected as the research subjects. A total of 380 questionnaires were distributed, and 328 valid questionnaires were collected, with an effective response rate of 86.3%. Among them, there were 72 male students (22.0%) and 256 female students (78.0%); 89 freshmen (27.1%), 95 sophomores (28.9%), 83 juniors (25.3%), and 61 seniors (18.6%); 193 students in teacher-training majors (58.8%) and 135 students in non-teacher-training majors (41.2%).

2.2 Research Tools

The study utilizes three instruments: First, the self-developed “Classroom Interaction Scale for Chinese Language and Literature Major”, which is based on the theoretical framework of Han(2008) and includes 3 dimensions: “teacher-student interaction”, “student-student interaction”, and “text interaction”, with a total of 15 questions and a Likert 5-point scoring system; second, the “College Student Learning Engagement Scale” revised by Sun(2021), which is tailored to professional characteristics and includes 3 dimensions: cognitive, emotional, and behavioral engagement, with a total of 18 questions and a Likert 5-point scoring system^[4]; third, the academic achievement questionnaire, which is based on the average scores of core courses in the major, combined with teacher evaluations, and scored on a 100-point scale (Huang, 2020)^[5].

2.3 Test procedure

The questionnaire was distributed online through the “Wenjuanxing” platform. Before the survey, the research purpose and filling requirements were explained to the participants, emphasizing anonymity and data confidentiality. The survey was conducted from March to April 2025, with an average filling time of about 12 minutes.

2.4 Data analysis methods

Data processing was conducted using SPSS 26.0 and the PROCESS macro program, specifically including descriptive statistics, Pearson correlation analysis, regression analysis, and mediation effect testing.

3 Research results

3.1 Common method bias test

The Harman’s single-factor test was employed to examine common method bias. Exploratory factor analysis was conducted on all scale items, and eight factors with eigenvalues greater than 1 were extracted without rotation. The variance explained by the first factor was 28.73%, which is below the critical value of 40%. This indicates that there is no significant common method bias in this study.

3.2 Descriptive statistics and correlation analysis

The mean, standard deviation, and correlation coefficients of each variable are presented in Table 1. The results indicate that there is a significant positive correlation between classroom interaction and academic achievement ($r=0.423$, $p<0.001$) as well as learning engagement ($r=0.516$, $p<0.001$); similarly, there is a significant positive correlation between learning engagement and academic achievement ($r=0.489$, $p<0.001$). The correlation among the variables meets the prerequisites for mediation effect testing.

Table 1. Descriptive statistics and correlation analysis of each variable (n=328)

Variable	M	SD	1	2	3
1. Classroom interaction	3.82	0.65	1		
2. Learning engagement	3.75	0.68	0.516***	1	
3. Academic achievement	78.65	8.32	0.423***	0.489***	1

Note:*** $p<0.001$

3.3 Mediation effect test

The mediating effect of learning engagement was tested using Model 4 from the PROCESS macro program developed by Hayes, while controlling for demographic variables such as gender, grade, and major direction. The results are presented in Table 2:

1.Direct effect: Classroom interaction has a significant direct predictive effect on academic achievement ($\beta=0.235$, $t=4.128$, $p<0.001$), indicating that the hypothesis H1 is supported.

2.Mediating Path: The positive predictive effect of classroom interaction on learning engagement is significant ($\beta=0.482$, $t=8.753$, $p<0.001$), confirming Hypothesis H2. When both classroom interaction and learning engagement are included in the regression equation, the positive predictive effect of learning engagement on academic achievement remains significant ($\beta=0.394$, $t=6.831$, $p<0.001$).

3.4 Mediating effect value

Through 5000 repeated samplings using the Bootstrap method, the results show that the mediating effect value of learning engagement is 0.190, with a 95% confidence interval of [0.128, 0.263], which does not include 0, indicating that the mediating effect is significant. The proportion of the mediating effect to the total effect is $0.190/(0.235+0.190)=44.6\%$, which means that learning engagement plays a partial mediating role between classroom interaction and academic achievement. Hypothesis H3 is valid.

Table 2 Regression analysis results of mediation effect

dependent variable	predictor variable	B	SE	t	p	R ²	F
Learning engagement	constant term	1.215	0.238	5.105	***	0.321	35.82***
	classroom interaction	0.482	0.055	8.753	***		
Academic Achievement	constant term	45.286	3.152	14.367	***	0.305	28.95***
	classroom interaction	0.235	0.057	4.128	***		
	Learning engagement	0.394	0.058	6.831	***		

Note: *** $p<0.001$, control variables have been included in the regression equation but not listed

4 Discussion

4.1 The direct impact of classroom interaction on academic achievement

This study finds that classroom interaction in Chinese language and literature can directly and positively predict academic achievement, which is consistent with the findings of Han(2008). In Chinese language and literature classrooms, teacher-student interaction can help teachers promptly identify students' deviations in understanding texts and deepen their knowledge acquisition through targeted guidance; peer interaction can expand students' thinking through "multi-angle interpretation" and promote active knowledge construction; and "text interaction", as a professional characteristic dimension, enables students to establish deep connections with classic texts through interaction, enhancing their literary analysis and appreciation abilities, all of which directly contribute to the improvement of academic achievement.

4.2 The mediating role of learning engagement

Research has confirmed that learning engagement plays a partial mediating role between classroom interaction and academic achievement, meaning that classroom interaction indirectly influences academic achievement by stimulating students' cognitive, emotional, and behavioral engagement. From the perspective of cognitive engagement, teachers' questioning in classroom interaction prompts students to actively consult materials and organize logic, enhancing cognitive depth; from the perspective of emotional engagement, empathetic discussions among students strengthen students' identification with their major and their interest in learning; from the perspective of behavioral engagement, interactive forms such as classroom presentations and group cooperation force students to actively participate in the learning process, strengthening their ability to apply knowledge (Sun, 2021). This mediating mechanism indicates that classroom interaction does not directly "transfer" academic achievement, but rather achieves a chain effect of "interaction - engagement - achievement" by activating students' engagement state.

4.3 Educational Implications

First, optimize classroom interaction design. Teachers can adopt “problem-driven interaction” and “situational interaction” in combination with the characteristics of Chinese language and literature major to enhance the pertinence and interest of interaction.

Second, strengthen guidance on learning engagement. For different dimensions of engagement, teachers can stimulate cognitive engagement through “cognitive challenge”, enhance emotional engagement through “emotional connection”, and strengthen behavioral engagement through “task-driven approach”.

Thirdly, attention should be paid to the fairness of interaction. To avoid classroom interaction being concentrated on a few students, methods such as “rotating speaking” and “anonymous questioning” can be adopted to ensure the interactive participation rights of students with different personalities and backgrounds. Special attention should be paid to students with low interest in the major, and personalized interaction can be used to stimulate their willingness to engage (Du, 2025) ^[6].

5 Research limitations and prospects

This study has the following limitations: Firstly, the sample was selected using convenience sampling, and the coverage of regions and types of institutions is not comprehensive enough, which may affect the generalizability of the results; secondly, academic achievement was measured using self-reported grades, which, although corrected based on teacher evaluations, may still have biases; finally, the study is a cross-sectional design, unable to reveal causal relationships between variables.

Future research can employ random sampling to broaden the sample scope, combine multiple methods such as classroom observation and academic work analysis to measure academic achievement, and further verify the causal impact of classroom interaction on academic achievement and the stability of the mediating mechanism through longitudinal studies or experimental design.

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The Aesthetic Education Segment of Music Education: An Example of the Teaching Design of Jasmine and Ode to Joy

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Abstract: Jasmine Flower and Ode to Joy are classical vocal works widely used in Chinese high school music textbooks. This study will utilize these two classical works as case studies to explore how to realize the diversification and internationalization of Chinese aesthetic education through classroom design from a cross-cultural perspective of the East and the West. This paper will also explore the elements of Jasmine Flower and Ode to Joy in terms of tuning, composition, and singing techniques. Through the teaching design, students will be guided to root their national cultural confidence in the process of ‘Educating People Through Beauty’, thus providing feasible curriculum examples and teaching ideas for the new era of general high school music aesthetic education.

Keywords: Music Education; Chinese Music Education; Aesthetic Education; Jasmine; Ode to Joy

1 Introduction

In the context of globalisation and multiculturalism, music aesthetic education is not only an important part of the school aesthetic education teaching system but also an important way to promote young people’s international understanding and strengthen national cultural identity (Guo et al., 2020). General Secretary Xi Jinping of China has repeatedly emphasised in his speeches that ‘we should insist on educating people with beauty and culture, pass on the excellent traditional Chinese culture, and enhance students’ aesthetic and humanistic qualities.’ In 2024, the Ministry of Education issued the Notice on the Comprehensive Implementation of School Aesthetic Education Immersion Actions, which made it clear to deepen the construction of the aesthetic education curriculum system in the context of the new era. The country’s strategic goal of valuing artistic practices and promoting the mutual integration of aesthetic education and other disciplines (Freedman, 2025). This series of policies and concepts provides theoretical support and action guidelines for the reform and practice of music education in China’s general high schools.

From China’s ‘Notice of School Aesthetic Infiltration Action’ and the comparison of the current situation of music education in the UK, it is clear that the policy of merging Chinese and Western music education is not just an empty slogan, but rather a practical manifestation of the cultural strategy and internationalised educational co-operation at the national level. The core of this policy lies in the need to not only pass on the excellent traditional Chinese culture, but also actively absorb the diverse musical cultures of the world (Li, 2016; Tang, 2024). The state forms an open, inclusive, and confident new generation cultural system through educational means. On the one hand, the core content of music education is ‘aesthetic education’, as emphasised in the Notice of School Aesthetic Education Infiltration Action. “Aesthetic education is a channel for nurturing Chinese cultural confidence and national spirit. Aesthetic education seeks to combine traditional culture and modern art, and to make ethnic music education an important part of school music education (Guan, 2023). This enhances students’ motivation to understand and love their own musical language and aesthetic traditions. At the same time, the Circular on School Aesthetic Education Immersion Action also clearly states that to build an aesthetic education curriculum system that is synergistic with other disciplines, it is necessary to encourage the development of interdisciplinary aesthetic education resources. This means that Chinese folk music, Western classical music, modern pop music, and other diversified music content should be added to the teaching content. This will broaden students’ artistic horizons and foster international understanding. On the other hand, Cao Qun’s interview further explains the complementarities and differences between Chinese and British music education in terms of philosophy and methodology, and discusses in detail the feasibility and necessity of ‘merging the East and the West’. In the interview, he said, “Chinese music education traditionally emphasises the practice of technique and performance, and the formation of a solid performance and technique inheritance system; whereas British music education focuses more on the development of individual expression and creativity, and emphasises students’ self-discovery, collaborative learning and cross-cultural

communication (Finney, 2016). If the two are combined, it can not only retain the technical advantages of Chinese music education but also make up for the shortcomings of innovation and international communication.” Therefore, many Sino-British co-operation programmes have made the ‘merging of East and West in music’ a core objective from policy to practice. For example, transnational arts exchange programmes have been set up in universities, students are encouraged to design and perform in concerts that combine East and West, and teachers from different cultural backgrounds are encouraged to develop multicultural music teaching materials (Wang, 2023). These concrete initiatives are precisely the practice of the State’s cultural strategy of ‘importing and exporting’ in the field of music education.

At the same time, music, as a ‘world language’ that transcends linguistic and ethnic boundaries, plays an important role in the exchange and integration of Chinese and foreign cultures (Jin & Hongyin, 2016). Cao Qun, a Chinese educator, said, ‘Music and art education can not only communicate human emotions and break down cultural barriers, but also enhance the understanding and recognition of history, traditions, and values of different cultures in the process of learning and performing.’ In contrast to Western music education, traditional Chinese music education tends to focus on technique and national cultural expression. In contrast, Western music education, such as that in the UK and the US, places more emphasis on personality development, creative thinking, and interdisciplinary practice. This difference also reminds China’s new era of school music education needs to focus on students’ cross-cultural understanding and even improve their individual creativity while inheriting national music traditions.

2 Teaching Design of Chinese Song “Jasmine”

The present music education in our schools is dominated by folk music cutting from the music teaching materials . For example, the folk song Jasmine Flower of Jiangnan mentioned in this paper and Yellow River Cantata of Mr. Xian Xinghai are common songs in the teaching materials. As a masterpiece of Jiangnan folk song, Jasmine Flower is based on its typical pentatonic scale modulation and single two-part structure. It vividly embodies the beauty of ambiguity, symmetry and imagery of traditional Chinese music melody, and carries a deep national cultural memory (Tao et al., 2023). Beethoven’s Ode to Joy, on the other hand, is a representative of Western symphonic choral art, with its bright natural major key, repetitive development of thematic motifs and humanistic idealistic connotations, which focuses on the salute to humanity and the idea of world commonwealth during the European Enlightenment (Geck, 2017). This kind of folk music makes students deeply rooted in traditional Chinese culture and helps to cultivate young people’s patriotism. However, with the acceleration of social development and international interactions, students who are limited to traditional Chinese culture cannot meet the requirements of the new age students’ knowledge of the world’s multiculturalism. As Cao Qun emphasised in the interview, ‘In British music education, there is often a focus on diversity and cross-border integration, encouraging students to understand different cultures and develop their individuality and creativity through composition and performance.’ This revelation is an important reference for China’s current general high school music education. Therefore, the state supports the methodical introduction of Western classical music works in school aesthetic education, respecting global multiculturalism and enhancing the international outlook of young people.

In addition, China has had exchanges of Chinese and Western musical instruments since the ancient Silk Road, to the introduction of Western orchestral and choral art in modern times. From the ancient Silk Road to the introduction of Western orchestral and choral music in modern times, and nowadays the Chinese symphony orchestra and folk orchestra are performing together, the Chinese and Western music cultures have been colliding and absorbing and even re-inventing themselves (SIWEN & Jamnongsarn, 2024). This is a reflection of China’s cultural confidence. The state’s support for the introduction of foreign cultures in education is not only to enhance students’ global competence, but is also a contemporary expression of the spirit of Chinese culture, which is eclectic and advances with the times

Pedagogical objective	1. Students feel the beauty of Chinese folk songs and appreciate the author’s feelings for the love of a better life. It promotes national music and strengthens national self-confidence. 2. Through the combination of audio-visual, contextual approach and group co-operation and investigation, students can further improve their music appreciation skills. 3. Understand the structure of folk tuning (pentatonic tuning) and be able to express the song completely.
Introduction to the classroom	Teachers use multimedia to show students pictures of jasmine flowers to stimulate interest and introduce new lessons.

Preliminary perception	Listen to the song for the first time and ask the class about the mood and tempo of the song (beautifully, medium tempo). Listening to the song again, ask the students to close their eyes and think: what kind of image comes to your mind (the image of jasmine flowers in full bloom) Third listen to the song and ask students to share their own humanities knowledge related to the lesson
Exploring music	(1) The teacher plays and sings the song, and asks the students to follow the teacher's voice to sing the melody sheet, to find out the teaching difficulties and solve them one by one. 1. Syncopated rhythm 2. Dotted rhythm 3. One-word polyphonic singing (2) Please add the lyrics to sing in full, prompted by the breath smooth, sing a beautiful feeling (3) group chorus practice, and do practice tips (4)Teacher asks: What kind of feelings does this song express? (Love for a beautiful life)
Consolidation and extension	Students use the sand hammers, triangles and tambourines distributed before the lesson to make up an accompaniment to a song and perform an integrated art performance. 10 minutes for groups of 4 students to work together and present their work freely, with a combination of self-assessment and teacher's assessment.
Group work	(1) Teachers and students sum up what they have learnt from this lesson (2) Please come down to search for Jasmine music related materials with online resources to share in the next lesson.

3 Teaching Design of West Song Ode to Joy

Ode to Joy originates from the fourth movement of German composer Beethoven's Symphony No. 9. The work adopts a major key tuning with a bright rhythm and a complex polyphonic and harmonic structure in the choral part, which is a concentration of the humanistic ideals and rational spirit of Western classical music. The lyrics of Ode to Joy is originally from Schiller's poem, expresses the yearning for human freedom, fraternity and world unity (Baird, 2013). It contrasts with the beauty of oriental imagery represented by Jasmine.

In the specific classroom, through the comparative teaching of these two works, teachers can not only let students feel the differences and similarities of different modes, such as, pentatonic scale and natural major, and the structure of the piece (single two-part form and large-scale choral form), but also stimulate students to think deeply about the Chinese and Western cultures in terms of values and artistic expression through the interpretation of the cultural background. For example, the national memory and idyllic sentiment behind Jasmine Flower, and the rational enlightenment and humanistic spirit in Ode to Joy will help students to understand the universality of mankind's common pursuit of beauty and ideals in different cultural contexts. These concepts will also be displayed in the teaching design of Ode to Joy.

Pedagogical objective	1. Students feel the beauty of West songs and appreciate the author's feelings of yearning for freedom and to understand multiculturalism 2. Through the combination of audio-visual, contextual approach and group co-operation and investigation, students can further improve their music appreciation skills. 3. Understand the structure of the progressive scale and be able to perform the song in its entirety.
Introduction to the classroom	Teachers use multimedia to show students pictures of Beethoven to stimulate interest and introduce new lessons.
Preliminary perception	Listen to the song for the first time and ask the class about the mood and tempo of the song (Cheerfully, medium speed). Listening to the song again, ask the students to close their eyes and think: what kind of image comes to your mind (Images of people's unity) Third listen to the song and ask students to share their own humanities knowledge related to the lesson
Exploring music	(1) The teacher plays and sings the song, and asks the students to follow the teacher's voice to sing the melody sheet, to find out the teaching difficulties and solve them one by one. 1. Progressive scale 2. Dotted rhythm 3. Iterative notation (2) Please add the lyrics to sing in full, prompted by the breath smooth, sing a beautiful feeling (3) group chorus practice, and do practice tips (4)Teacher asks: What kind of feelings does this song express? (The desire for freedom)
Consolidation and extension	Students use the sand hammers, triangles and tambourines distributed before the lesson to make up an accompaniment to a song and perform an integrated art performance. 10 minutes for groups of 4 students to work together and present their work freely, with a combination of self-assessment and teacher's assessment.
Group work	(1) Teachers and students sum up what they have learnt from this lesson (2) Please come down to search for Beethoven related materials with online resources to share in the next lesson.

4 Conclusion

First of all, Jasmine Flower as a famous folk song of Jiangnan, contains rich ethnic heritage and regional cultural characteristics. Through learning and singing this piece, students can not only fully feel the unique pentatonic tuning of Chinese folk songs, but also feel the

unique aesthetic and cultural context of the Chinese nation in the melody. It helps young people to build up a sense of pride in their own culture from childhood, and to enhance their cultural identity and self-confidence through subtle influence. Ode to Joy, as an immortal classic of Western music, carries the concept of liberty and fraternity of the European Enlightenment. Through the study of this work, students are exposed to the western music language and singing techniques, such as major and minor modes, polyphony and chorus, which are very different from those of Chinese national works. More importantly, they will be able to feel the different values of 'joy' and 'freedom' that different cultures pursue. This cross-cultural perspective is decisive for the cultivation of students' international understanding.

Comparing and contrasting Jasmine and Ode to Joy as a teaching combination is a kind of aesthetic education practice based on the concept of multiculturalism. The two works are different in terms of historical background, cultural connotation, musical language and aesthetic style, and such differences and complementarities can precisely provide the classroom with rich comparative perspectives, as well as an entry point for cross-cultural understanding, which opens up a new way of thinking about aesthetic education and diversified education in schools in the new era. Among other things, comparative teaching in the classroom helps to cultivate students' aesthetic ability from multiple perspectives. Different from the single repertoire explanation, comparison teaching encourages students to compare and contrast from multiple perspectives, such as tuning, style, lyrics, cultural background, and singing techniques. For example, the teacher can introduce the historical background of the differences in musical modes, such as the audio-visual differences between ethnic pentatonic modes and Western natural major and minor modes. Another example is that teachers can compare the beauty of the differences between Chinese and Western tunes (Wang & Webb, 2024). In this kind of comparative discussion, students can be more sensitive to the diversity and commonality of 'beauty' in different music systems. This will further enhance their aesthetic ability.

The selection of Jasmine and Ode to Joy as a teaching combination provides a model lesson that can be learnt from for other Chinese and Western music teaching. On the one hand, it is rooted in the local community, and on the other hand, it is orientated towards the world, which is not only in line with the teaching contents of the textbook, but also provides students with flexible aesthetic education from multiple perspectives, making it an operable, replicable and replicable teaching case. This is of guiding significance in promoting the goal of 'comparing and exchanging Chinese and foreign cultures in aesthetic education' advocated in the 'Notice of School Aesthetic Education Immersion Action'.

From the perspective of the function of aesthetic education, the intermingling of Chinese and Western music in teaching is the enrichment of musical skills and knowledge, but also the mutual nourishment of aesthetic literacy and humanistic sentiments. On the one hand, the study of national music makes students rooted in the soil of local culture and enhances their sense of cultural pride and identity; on the other hand, the introduction of classical western music provides students with new thinking and expression paradigms, broadening the technical vision and aesthetic space of musical expression. Meanwhile, through diversified vocal practices in the classroom (e.g. comparing and contrasting Chinese and foreign repertoire, group discussions, cultural background seminars), students not only mastered vocal techniques, but also learnt to respect and understand different cultures with an open mind, which is exactly what is advocated in the Notice of Aesthetic Education Immersion Actions. This is exactly the embodiment of the 'combination of aesthetic education programmes and practical activities' advocated in the Notice of the Aesthetic Education Immersion Initiative.

In addition, from the perspective of teaching methodology, the merging and fusion of Chinese and Western music has also inspired teachers to continuously update their teaching concepts and design ideas. Taking the combination of Jasmine Flower and Ode to Joy as an example, teachers need to not only teach vocal skills, but also guide students to make comparative analyses of tunes, patterns and singing styles, and encourage students to ask questions, explore answers and express themselves in music. This kind of classroom logic of 'Comparison-Exploration-Experience-Innovation' is the concrete practice of the educational concept of 'educating people with beauty, beautifying people with beauty, cultivating people with beauty' in the new era of aesthetic education. The logic of the classroom is the specific practice of the new era of aesthetic education 'to educate people with beauty, to beautify people with beauty, to cultivate people with beauty'. For young high school students, they are in the stage of gradually establishing their worldview, values and aesthetics. Every cultural explanation and aesthetic experience in the music classroom has a subtle influence on them. Teachers through the Chinese and Western teaching classroom, so that students show a stronger international understanding and cross-cultural understanding, this 'silent' teaching method is the 'aesthetic ed-

education' pursued. In the process of teaching, I, as a music teacher who has received both domestic and foreign American vocal education, am well aware of the differences between the Chinese and Western vocal systems in terms of musical language, singing skills and aesthetic orientation. This dual educational background enabled me to combine the oriental aesthetics of Chinese folk songs with western music science vocalisation in classroom design, and to construct teaching activities with comparative line and integration (Cui, 2021). At the same time, my understanding of Western art education concepts and classroom methods during my study abroad period also enabled me to organise my teaching from a more open and cross-cultural perspective, guiding my students to go beyond 'technique' and learn the connotations of Chinese and Western music from a cultural and aesthetic perspective.

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A CROSS-CULTURAL STUDY ON THE PROMOTION OF CHINESE CULTURE

—A CASE STUDY OF HANFU

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Abstract: In recent years, Hanfu, as a symbol of Chinese traditional culture, has gained increasing global influence. Nevertheless, its dissemination abroad has faced considerable challenges. This thesis defines and analyzes the concept of Hanfu and examines major obstacles in its overseas communication, including issues related to online promotion, skepticism and misconceptions, and the fragile development of Hanfu associations abroad. Drawing on theories of cross-cultural communication, the study identifies the underlying causes of these problems and proposes practical strategies. These include rediscovering the contemporary value of Hanfu, addressing the needs of foreign audiences, and balancing universal cultural perspectives with the unique identity of Hanfu. The findings aim to provide theoretical insights and practical guidance for the global dissemination of Hanfu and other forms of traditional Chinese culture.

Keywords: Hanfu; Promotion of Chinese Culture; Cross-Cultural Perspective

1 Introduction

In the 2009 French film *Le Hérisson* (The Hedgehog), an unforgettable scene unfolds when a guest claims that Go was invented by the Japanese. Paloma, the young protagonist, immediately corrects him, noting its Chinese origin. This exchange not only highlights Paloma's intellect but also symbolizes a shift in Western perceptions of China, moving from outdated stereotypes toward greater accuracy.

Since joining the WTO in 2001, China has become more engaged with the world, economically and culturally. Globalization requires not only learning from others but also presenting China's heritage. Among these, Hanfu—the traditional clothing of the Han people—stands out as a powerful symbol of cultural identity, reflecting Chinese aesthetics, philosophy, and continuity.

The modern “Hanfu Movement” has grown rapidly in China, driven by cultural confidence and younger generations' interest in tradition. Today, Hanfu is worn not merely as fashion but as cultural expression and pride.

This thesis examines Hanfu as a lens for understanding how Chinese culture is recognized globally. It explores how Hanfu can make tradition accessible to foreign audiences and how it serves as a medium of cross-cultural communication, bridging civilizations and enhancing China's cultural presence worldwide.

2 Literature Review

2.1 Studies Abroad

Foreign research on Hanfu is still limited, as most Western scholars focus on their own clothing traditions. Yet some works offer useful insights. Dieter Kuhn, in *The Age of Confucian Rule: The Song Transformation of China*, describes Song dynasty clothing in detail, showing its role in social and cultural life. Comparative studies on other traditions are also relevant: Raluca Creangă (2020) highlights how reinventing Romanian dress stimulates cultural identity^[1], while Jenny Hall (2015) examines the decline of the kimono and explores ways to refashion it for modern Japan.^[2] Some scholars directly address Hanfu: Zhou Xing (2014) identifies “origin,” “continuity,” and “purity” as central to its definition, stressing its link to identity and authenticity.

2.2 Studies at Home

Domestic research is far richer. Scholars emphasize that Hanfu is not only clothing but also a cultural symbol embodying memory and identity. Zhang Yi (2013) views Hanfu as representing Han culture and suggests its revival helps counter both globalization's pressures and

blurred identity.^[3] Zhang Qiqi (2019) argues that Hanfu fosters cultural pride, especially among youth, and strengthens national self-esteem. Other studies stress its educational and social functions, noting that wearing Hanfu is a living form of cultural transmission. Research also highlights its potential in cultural and creative industries such as fashion, tourism, and media.

In short, foreign studies are relatively descriptive or comparative, while Chinese scholarship explores Hanfu's symbolic, educational, and industrial roles, situating the movement within China's cultural renaissance.

3 Definition and History of Hanfu

Hanfu is generally defined as the traditional clothing system of the Han people, originating from Huaxia attire before the Qin dynasty (221–206 BCE) and evolving until the fall of the Ming in the 17th century. Rather than a single garment, it comprises styles sharing features such as cross-collar, right-over-left closure (*jiaoling youren*), belts instead of buttons, and wide sleeves. Today, Hanfu is both a revival of historical dress and a marker of cultural identity.

The term “Hanfu” first appeared in the Eastern Han Dynasty (*Hanshu*, Volume 96), where it referred to the Han court's costume system. Archaeological finds, such as Mawangdui tomb records, also attest to its use. During later dynasties, Hanfu was recognized as a cultural marker: for instance, the History of Liao records that Khitan rulers adopted Hanfu in certain contexts while retaining their own dress elsewhere.

With the rise of the Hanfu Movement in the 21st century, the term has acquired renewed meaning. Scholars generally define it as “a series of costumes with a distinctive style based on the dress of the Han people.” Across four millennia, Hanfu encompassed garments such as *shangyi xiashang* (upper garment and skirt), *shenyi* (deep robe), and *ruqun* (jacket and skirt), with the overlapping rightward collar as a consistent feature.^[6] *Shenyi* differ from robes in the fact that the former was not passed down, whereas the latter were worn till modern times.^[7]

To sum up, Hanfu has existed in ancient times, but its meaning has shifted over the centuries.^[6]

As a national costume, Hanfu reflects philosophy, etiquette, and aesthetics, visibly distinct from other ethnic styles. While its ancient role included marking class and status, its modern revival emphasizes cultural identity and continuity. In this paper, “Hanfu” refers mainly to this contemporary sense: the recreation and reinterpretation of traditional Han attire in today's society.

4 Concept of Cross-Cultural Communication in the Context of Hanfu

The notion of cross-cultural communication was first articulated by Leo Frobenius in *Der Westafrikanische Kulturkreis* (1897/1898) to describe the diffusion of cultural elements such as ideas, technologies, and religions across boundaries. Later interpretations, such as Chen Guoming's, highlight that cross-cultural interaction entails negotiation, transformation, and even tension, rather than simple information transfer.

Viewed through this lens, the overseas promotion of Hanfu exemplifies cultural diffusion. It is not a unilateral projection from China to foreign audiences^[5], but a dynamic exchange in which Hanfu is received, interpreted, and redefined by diverse groups. Both Chinese advocates and foreign participants serve as communicative agents, collectively shaping its meaning. In this process, Hanfu gains renewed vitality, functioning as a cultural bridge that reflects broader patterns of diffusion, adaptation, and mutual influence in a global context.

5 Hanfu Promotion in Contemporary China and Beyond

The modern Hanfu revival is often traced to November 22, 2003, when Wang Letian walked the streets of Zhengzhou in handmade robes, an event later seen as a symbolic milestone. Since then, the Hanfu Movement has expanded rapidly, led mainly by younger generations but gradually embraced across age groups.

Government policy has further encouraged this revival. The 2017 Opinions on the Implementation of the Excellent Chinese Traditional Culture Inheritance and Development Project called for integrating tradition into education and fashion. Hanfu has since appeared in major cultural events and on global platforms such as New York's Times Square. Annual festivals, such as the Xitang Hanfu Cultural Week, now attract hundreds of thousands of participants. In January 2020, Hanfu was even displayed on the big screen of New York Times Square. From 2017 to 2019, the global Hanfu Culture Association underwent a growth rate of 46%. Each year, from April 17 to 18, Hanfu enthusiasts gather in Xitang, an ancient town over a thousand years old, to celebrate Hanfu Culture Day by wearing traditional garments and strolling with

friends. In 2020, the event attracted a total of 187,000 visitors, among whom more than 86,000 people wore Hanfu. In the following years, the event gradually evolved into the “Xitang Hanfu Cultural Week,” which has usually been scheduled in the autumn months (October–November) and extended in duration, no longer limited to just two days.

Overseas promotion is driven largely by associations, enterprises, and individuals. While the Chinese diaspora remains the main audience, non-Chinese groups are gradually engaging with Hanfu. Media play a central role: over 60% of Chinese netizens report that historical dramas and platforms like Weibo, TikTok, and WeChat shape their understanding of Hanfu. Influencers such as Li Ziqi demonstrate how visual culture can overcome language barriers and spread traditional aesthetics worldwide.

With the development of media, social networks have gradually become increasingly important in promoting Chinese traditional culture. Statistics show that more than 60% of Chinese internet users are affected by ancient costume drama, and over half of them have deepened their understanding of Hanfu via platforms like Microblog, Tik-Tok, and WeChat. According to statistics, more than 60% of Chinese netizens are influenced by ancient costume films and TV plays, and more than half of them have deepened their understanding of Hanfu through microblog and other social networks, believing that Hanfu is a good way to carry forward traditional culture.^[8] The reputation of Li Ziqi’s food videos has spread fast in both domestic and foreign social media. She has won a large number of fans clicking, watching and making comments and interactions. Under one of her videos entitled “potato’s life”, one careful audience (a Youtube netizen) left a comment saying, “I watched the video for 17 minutes and only heard the girl talking for 24 seconds in a language I didn’t understand at all.” Although the difference of language is the main obstacle to Li’s promotion of her videos outside China, it will never become a cognitive obstacle to the receivers, as long as they love delicious food and pleasant drinks.^[10]

The Hanfu industry has grown into a thriving cultural economy. By 2019, its market value exceeded 1 billion yuan, with annual growth of around 150% and turnover on Taobao surpassing 2 billion yuan. At that time, the consumer group was relatively small, but the scale was growing. The number of Hanfu fans reached 3.561 million, 74.4% than that last year.^[8]

In sum, Hanfu promotion today is sustained by both cultural enthusiasm and market forces, advancing domestically through festivals and policy, and internationally through media and diaspora networks, with growing potential to influence global cultural landscapes.

6 Problems of Hanfu’s Overseas Communication and their Reasons

6.1 Problems

6.1.1 Online Promotion

Although online platforms such as Hanfu Map once attempted to collect associations and merchants, poor maintenance, inaccurate data, and the short lifespan of many overseas organizations have limited their effectiveness. Moreover, most Hanfu videos are in Chinese, with few English-language materials available, which hinders accessibility for international audiences.

6.1.2 Skepticism and Misconception

The Hanfu Movement has also faced skepticism. Some critics argue that it reflects Han-centric nationalism^[10] and may alienate China’s ethnic minorities, questioning whether Hanfu can represent all Chinese culture. Others challenge the historical authenticity of its claimed origins, such as the link to the Yellow Emperor. Misconceptions abroad further complicate matters: for example, some South Korean netizens have misidentified Hanfu as Hanbok, provoking cultural disputes. International media coverage has at times portrayed the movement as nationalistic or even oppressive.

According to the theory of Professor Zhou Xing about the “origin”, “continuity” and “purity”^[11], Hanfu is believed to originate from the times of Yellow Emperor, Huangdi. However, some non-supporters of Hanfu movement argue that the story of Yellow Emperor is a mere mythology, because there was no firm historical evidence that can prove Huangdi truly existed, for at that time Chinese characters was not invented yet, that the story about Hanfu and Huangdi, as mentioned earlier, still requires further verification.

6.1.3 The Overseas Hanfu Societies

Overseas Hanfu organizations, while central to global promotion, face serious challenges. Membership is unstable due to student turnover, and leadership frequently changes. Activities often remain superficial, focusing on display rather than deeper cultural education. Their

audience is largely confined to Chinese international students, with limited outreach to local communities. In addition, they underutilize local and international media platforms, reducing their visibility and influence abroad.

6.2 Reasons

6.2.1 Cultural Differences

Fundamental differences between Chinese and Western cultures often create stereotypes and misunderstandings, making Hanfu difficult to communicate abroad. Some designers adopt Western aesthetics over traditional styles, while foreign audiences may misinterpret Hanfu or conflate it with other cultural clothing.

6.2.2 Limited Domestic Consensus

The cultural value of Hanfu is not yet fully recognized within China. While some scholars argue that strong domestic identity is a prerequisite for international acceptance, debates persist at home over Hanfu's authenticity and relevance. This lack of consensus weakens its symbolic power abroad, although certain foreign audiences—especially educated groups—remain receptive.

6.2.3 Shortage of Talents

Sustained overseas promotion requires skilled practitioners with knowledge of Hanfu's history, production, and cultural practices. Many Hanfu societies abroad lack such expertise, resulting in superficial displays rather than deeper engagement. Talent shortages and high turnover in overseas associations significantly hinder long-term cultural diffusion.

7 Solutions to the Problems

Recent research suggests that the overseas communication of Hanfu should be audience-centered and balance universal human values with the uniqueness of Hanfu. Based on existing problems, the following strategies can be proposed:

7.1 Online Promotion

Platforms like Hanfu Map require better maintenance and regular updates. More English-language content, such as films, animations, and short videos, should be produced to improve accessibility for global audiences. Successful Bilibili creators like ChiXia show the potential of combining commerce with cultural storytelling.

7.2 Skepticism and Misconception

Skepticism and misunderstanding are common in cultural diffusion. The government and media should provide accurate historical information through educational programs and public campaigns, strengthening awareness and countering misrepresentations abroad.

7.3 Overseas Hanfu Societies

To overcome instability and lack of expertise, trained professionals should be dispatched abroad, similar to the model of Confucius Institutes. This would ensure continuity and raise the cultural depth of overseas Hanfu activities.

7.4 Contemporary Values of Hanfu

Hanfu promotion should emphasize its relevance to modern society. Following Japan's example of wearing kimono formally, Hanfu could be introduced into professional or ceremonial contexts in China. Such integration would strengthen its legitimacy and demonstrate its adaptability.

7.5 Balancing Universality and Uniqueness

While the uniqueness of Hanfu can attract attention, long-term success depends on aligning with universal values such as aesthetic, cultural, and humanistic significance. Presenting Hanfu as both distinctively Chinese and universally meaningful will enhance its acceptance abroad.

7.6 Audience-Centered Approach

Effective communication requires considering the needs and expectations of foreign audiences. Drawing on "Uses and Gratifications"

theory, dissemination should aim to create cognitive, emotional, and behavioral resonance. Li Ziqi's success on YouTube exemplifies how relatable storytelling can bridge cultural gaps. Similarly, Hanfu can be promoted by linking it to pop culture—through animation, games, fashion shows, or international design competitions—appealing especially to younger generations. Confucius Institutes can also serve as platforms to introduce Hanfu from an early age.

To decide whether the promotion of Chinese culture is effective, we have to put ourselves in the shoes of people in the target culture. Next, we need to observe if the dissemination has caused any change in cognition, emotion, attitude, and behavior of those people—and see if there is any intentional or non-intentional impact on them.^[9]

8 Concluding Remarks

With a history of over 4,000 years, Hanfu has recently undergone a remarkable revival. In little more than a decade, the Hanfu Movement has seen steady growth in both the number of enthusiasts and the depth of cultural understanding. Patience and persistence are needed: before Hanfu can be widely appreciated abroad, it must gain broader recognition and acceptance at home.

Nevertheless, challenges remain. Some designers overly rely on Western aesthetics, key platforms such as Hanfu Map lag in updates, and critics view the movement as a form of nationalism. Overseas communities also struggle with unstable membership and a shortage of knowledgeable advocates.

Addressing these issues requires strategies that emphasize Hanfu's contemporary value, meet the needs of international audiences, and balance universal human values with the uniqueness of Han clothing. If these efforts succeed, Hanfu can transcend obstacles and emerge as both a symbol of Chinese identity and a meaningful contribution to global cultural exchange.

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Application of Trauma-Informed Care Education in Continuing Education for Obstetric Nurses

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Abstract: Objective: To investigate the application effect of trauma-informed care (TIC) education in continuing education for obstetric nurses and to analyze its impact on knowledge acquisition, communication skills, job satisfaction, and self-efficacy. Methods: A quantitative research design was adopted. Using convenience sampling, 120 obstetric nurses from a tertiary hospital were randomly assigned to an experimental group (receiving TIC education, n=60) or a control group (receiving conventional continuing education, n=60). The experimental group underwent an 8-week intervention, including theoretical lectures, case analysis, scenario-based simulations, and group discussions. Assessments were conducted pre-and post-intervention using the Trauma-Informed Care Knowledge Scale, Nursing Communication Competence Scale, Job Satisfaction Scale, and Nurse Self-Efficacy Scale. Results: Post-intervention, the experimental group scored significantly higher than the control group in knowledge, communication skills, job satisfaction, and self-efficacy ($P<0.01$). Conclusion: TIC education can effectively enhance obstetric nurses' professional competence and occupational identity. It is recommended to integrate TIC education into routine continuing education and promote its clinical application.

Keywords: Trauma-Informed Care Education; Obstetric Nurses; Continuing Education; Quantitative Research; Nursing Practice

1 Introduction

Obstetric nurses in clinical practice not only perform physiological care tasks but also face potential psychological trauma experienced by women and their families due to labor, postpartum recovery, complications, or adverse perinatal outcomes. Such trauma may manifest as anxiety, depression, or post-traumatic stress disorder (PTSD), profoundly affecting maternal and infant health and parent-child relationships (Beck & Watson, 2019). Traditional nursing education has primarily focused on technical skills and routine health guidance, with limited emphasis on recognizing and intervening in maternal trauma responses. Thus, integrating systematic TIC training into continuing education is a critical strategy to enhance nurses' professional competencies.

Originating in psychology and public health, Trauma-Informed Care (TIC) emphasizes the universality and long-term impact of trauma and focuses on safety, trust, collaboration, and empowerment in care delivery. In recent years, TIC has been increasingly applied in psychiatric, emergency, and pediatric nursing, with studies demonstrating improvements in nurses' communication skills, reduced burnout, and enhanced patient experiences (Leung et al., 2022). However, systematic TIC education in obstetric nursing remains exploratory in China, with limited quantitative evidence.

This study employed a randomized controlled trial to examine the effects of TIC education on obstetric nurses' knowledge acquisition, communication skills, job satisfaction, and self-efficacy, providing empirical support for reforming continuing nursing education in China.

2 Methods

2.1 Study Design

A randomized controlled trial design was used. Using convenience sampling, 120 obstetric nurses from a tertiary hospital were randomly assigned to an experimental group (n=60) receiving TIC education or a control group (n=60) receiving conventional continuing education. The intervention lasted eight weeks.

2.2 Participants

Inclusion criteria: (1) licensed nurses with at least one year of obstetric experience; (2) voluntary participation with signed informed consent.

Exclusion criteria: (1) currently on maternity or long-term sick leave; (2) severe psychological disorders affecting learning.

Sample size was calculated using G*Power software (effect size $d=0.5$, $\alpha=0.05$, power=0.80), yielding a minimum requirement of 102 participants. Considering a 20% attrition rate, 120 nurses were recruited.

2.3 Intervention

The experimental group received 8 weeks of TIC education, including: (1) theoretical lectures on TIC principles and obstetric applications; (2) case analysis of birth trauma and postpartum depression; (3) scenario-based simulations for patient communication and emergency response; (4) group reflection sessions to share experiences and provide team feedback. The control group received conventional continuing education, including updates on nursing techniques and routine lectures.

2.4 Measurement Instruments

Trauma-Informed Care Knowledge Scale (Knight, 2015, Chinese version, Cronbach's $\alpha=0.89$)

Nursing Communication Competence Scale (adapted from La Monica, 1987, Cronbach's $\alpha=0.85$)

Job Satisfaction Scale (revised version, Stamps, 1997, Cronbach's $\alpha=0.90$)

Nurse Self-Efficacy Scale (Chinese version, Schwarzer, 1999, Cronbach's $\alpha=0.88$)

2.5 Data Collection and Statistical Analysis

Questionnaires were administered pre- and post-intervention under the guidance of trained research assistants. Data were analyzed using SPSS 26.0. Continuous variables were expressed as mean \pm SD. Between-group differences were analyzed using independent-samples t-tests, and within-group pre-post comparisons used paired t-tests. Significance was set at $P<0.05$.

3 Results

3.1 Baseline Comparisons

No significant differences were observed between groups in gender, age, education, years of work experience, or baseline scores for knowledge, communication, job satisfaction, and self-efficacy ($P>0.05$), indicating comparability.

3.2 Pre- and Post-Intervention Score Comparisons

Table 1. Comparison of Pre- and Post-Intervention Scores Between the Two Groups of Nurses (M \pm SD)

Indicator	Time Point	Experimental Group (n=60)	Control Group (n=60)	t	P
Knowledge Level	Pre-intervention	62.35 \pm 8.12	61.87 \pm 7.95	0.29	0.77
	Post-intervention	85.42 \pm 6.73	68.14 \pm 7.24	14.21	<0.01
Communication Skills	Pre-intervention	70.21 \pm 7.68	69.94 \pm 7.53	0.19	0.85
	Post-intervention	88.36 \pm 6.91	74.65 \pm 7.02	10.52	<0.01
Job Satisfaction	Pre-intervention	64.82 \pm 6.94	65.01 \pm 7.12	-0.14	0.89
	Post-intervention	82.19 \pm 6.48	70.54 \pm 6.72	9.72	<0.01
Self-Efficacy	Pre-intervention	63.57 \pm 6.42	63.48 \pm 6.28	0.07	0.94
	Post-intervention	80.26 \pm 6.19	68.13 \pm 6.35	9.24	<0.01

The results indicate that, after the intervention, the experimental group scored significantly higher than the control group in knowledge level, communication skills, job satisfaction, and self-efficacy ($P<0.01$), suggesting that trauma-informed care education can comprehensively enhance obstetric nurses' professional competence and psychological adaptability. The intervention not only strengthened theoretical knowl-

edge acquisition but also markedly improved clinical communication skills and teamwork abilities, while increasing professional identity and job satisfaction, demonstrating the practical value and promotion potential of systematic, context-based education in continuing education programs.

3.3 Magnitude of Improvement

Table 2. Comparison of Post-Intervention Improvement in Each Dimension Between the Two Groups of Nurses (Score Change, $M \pm SD$)

Indicator	Experimental Group (n=60)	Control Group (n=60)	t	P
Knowledge Improvement	23.07 \pm 6.84	6.27 \pm 5.32	15.68	<0.01
Communication Skills Improvement	18.15 \pm 6.32	4.71 \pm 5.19	13.74	<0.01
Job Satisfaction Improvement	17.37 \pm 6.11	5.53 \pm 5.36	12.61	<0.01
Self-Efficacy Improvement	16.69 \pm 5.82	4.65 \pm 5.12	12.48	<0.01

The results show that the experimental group exhibited significantly greater improvements than the control group in knowledge level, communication skills, job satisfaction, and self-efficacy after the intervention ($P < 0.01$). This indicates that trauma-informed care education not only substantially enhances obstetric nurses' theoretical knowledge in the short term but also effectively strengthens clinical communication skills and psychological adaptability. Moreover, the marked increases in job satisfaction and self-efficacy suggest that this educational approach helps reinforce nurses' professional identity and confidence, providing empirical support for the continuous optimization of nursing practice.

4 Discussion

The results of this study indicate that Trauma-Informed Care (TIC) education can significantly enhance obstetric nurses' overall competencies, including professional knowledge, communication skills, job satisfaction, and self-efficacy. This finding is highly consistent with international research. For example, Isobel and Edwards (2017) found in their study on psychiatric nurses that TIC training effectively improved nurses' ability to recognize patients' trauma responses and strengthened their capacity to establish therapeutic alliances. Similarly, Leung et al. (2022), in a systematic review, reported that TIC education not only enhanced nurses' communication skills but also significantly improved their self-efficacy, providing empirical support for its practical application in clinical nursing. These international findings suggest that TIC education plays an important role in enhancing nursing professional competence, improving nurse-patient relationships, and enriching patient experiences.

Within the context of obstetric nursing in China, this study provides preliminary quantitative evidence supporting the application of TIC education, addressing a gap in the existing literature. Compared with traditional continuing education, TIC education not only emphasizes the transmission of theoretical knowledge but also focuses on scenario-based simulations, case analyses, and reflective learning. Through real-case discussions and simulated exercises, nurses can better understand the potential psychological trauma that mothers may experience during labor and postpartum recovery. This educational approach helps cultivate nurses' empathy and ethical sensitivity, enabling them to more accurately identify and respond to patients' psychological needs, thereby improving overall care quality and patient satisfaction. Moreover, the significant post-intervention improvements in job satisfaction and self-efficacy in the experimental group indicate that TIC education can enhance nurses' professional identity and confidence, supporting their career development and psychological well-being.

Nevertheless, this study has several limitations. First, it was conducted in a single center with a sample of 120 nurses, which limits the external validity of the findings, and their generalizability requires further verification. Second, the 8-week intervention period only reflects short-term educational effects and is insufficient to assess the long-term impact of TIC education on nurses' professional competencies and psychological adaptation. Therefore, future research should consider longitudinal follow-up designs to evaluate the sustainability and long-term effects of the intervention. Additionally, combining qualitative methods in subsequent studies—such as in-depth interviews and observational approaches—could provide a more comprehensive understanding of nurses' subjective experiences, emotional responses, and the translation of educational content into clinical practice, thereby offering more concrete empirical evidence for optimizing TIC curriculum

design and enhancing the effectiveness of its implementation.

5 Conclusion and Recommendations

TIC education significantly improves obstetric nurses' knowledge, communication competence, job satisfaction, and self-efficacy, confirming its practical value in continuing education. The experimental group showed greater improvements than the control group, demonstrating that systematic, scenario-based TIC education strengthens both theoretical and practical skills, as well as psychological adaptation. This enhances nurses' sensitivity to maternal trauma, empathy, and professional identity.

Based on the findings of this study, it is recommended that hospital nursing management departments incorporate Trauma-Informed Care (TIC) education into the routine continuing education programs for obstetrics and other high-risk departments, and establish a systematic curriculum framework. The curriculum should include theoretical instruction, case analysis, situational simulations, and group reflections to ensure that nurses achieve comprehensive improvements in knowledge mastery, communication skills, and psychological adaptability. Additionally, a blended learning approach combining online and offline methods can be adopted, which not only ensures teaching quality but also broadens training coverage, enhancing the flexibility and sustainability of nurses' learning. To further improve educational outcomes, hospitals should establish a complete evaluation and feedback mechanism to continuously monitor training effects and optimize course content and teaching methods in a timely manner, thereby forming a dynamically updated, progressive training system.

Furthermore, future research can be conducted in multiple centers with large sample sizes to enhance the external validity of the findings. Combined with qualitative research methods, this approach can deeply explore the long-term impacts of TIC education in clinical practice and its underlying mechanisms, including its effects on nursing quality, patient experience, and nurse-patient relationship improvement. Through multi-dimensional and multi-method empirical studies, evidence-based guidance can be provided for the reform of nursing continuing education, and reference can be offered for clinical management in obstetrics and other high-risk departments, further promoting the professional development of nurses and the optimization of patient care quality, achieving an effective integration of theory and practice.

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Current status and trends in research on the concept of Anthropocene—a CiteSpace-based bibliometric analysis

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Abstract: To conduct a visual metric analysis of the literature on the Anthropocene concept in Web of Science in the past 15 years, and collect a total of 504 academic papers, with a focus on Arts and Humanities Citation Index. This study analyzes the status and dynamic changes of the research in this field in terms of the number of publications, co-authors, collaborating institutions, cutting-edge developments, research hotspots, and research trends, to provide operational theoretical basis and practical guidance for the subsequent research on this concept. CiteSpace was used to visualize and analyze the literature on the concept of the Anthropocene in the past 15 years, and systematically analyze the status, institutions, hotspots and trends of the research on this concept. We analyzed the co-citations of the literature to identify the most influential publications in the research of the Anthropocene concept. Analysis of the evolution of research hotspots to identify the research trends of the concept at different stages and to explore deeper research hotspots.

Keywords: Anthropocene; CiteSpace; Bibliometric Analysis; Research Hotspots

1. Introduction

With the increasing intervention of human activities on the Earth's natural environment, ecological and environmental problems on a global scale have become more and more prominent, and the concept of the Anthropocene has gradually come into people's view. This concept emphasizes the far-reaching impact of human activities on the earth's system and has become an important perspective for global change research. To comprehensively understand the current research status and development trend of the Anthropocene concept, this paper systematically compiles and analyzes the relevant literature at home and abroad based on the CiteSpace bibliometric analysis tool. By visually processing vast amounts of literature data using CiteSpace software, we aim to identify key research themes, trends, and collaborations within the field of the Anthropocene studies. This analysis will provide insights into the evolving landscape of the Anthropocene research, highlighting important contributions, gaps, and future directions. The findings of this bibliometric analysis will inform our understanding of the current research landscape and identify potential areas for future exploration. This study aims to contribute to the ongoing discussion and advancement of the Anthropocene concept, promoting interdisciplinary collaboration and innovative research approaches.

2. Methodology

Data collection. Given that this research centers on the Anthropocene, we retrieved and examined published documents through an advanced search in the Web of Science (WoS), specifically Thomson Reuters Core Collection. The selection of WoS as the data source, with a focus on the Arts and Humanities Citation Index (A and HCI), is based on two considerations. For one thing, WoS boasts an independent and comprehensive editorial procedure, which guarantees the high quality of the journals included. Moreover, it has developed a unique data structure built on 15 years of consistent, precise, and complete indexing, making the articles indexed in WoS of superior quality. Totally, 4252 papers were collected from 40 WoS categories, including environmental sciences, environmental studies, ecology, geosciences multidisciplinary, geography, green sustainable science, technology, and cultural studies. After excluding some works that were unrelated to the Anthropocene, 504 publications remained for further analysis.

Descriptive analysis. Prior to visualizing data via CiteSpace, we performed a descriptive analysis to discern annual publication trends, with the goal of pinpointing the most prolific journals, authors, and institutions. These descriptive analyses were carried out directly using the data extracted from the WoS platform. The WoS website provides information on the annual number of published works; we utilized SPSS software to generate the annual publication trend. Additionally, the WoS website offers data on the number of publications per journal, author, and institution. The diagram illustrates the annual publication counts as well as the overall trend.

CiteSpace-based analysis. The descriptive analysis of WoS data merely offers a fundamental outline of the research domain, failing to comprehensively depict research initiatives over past decades or indicate future research orientations. Previous review studies that lacked bibliometric tools predominantly depended on existing knowledge and subjective assessments. To tackle this issue, we employed CiteSpace to explore the knowledge structures of Anthropocene research developed over the years.

In the present study, we utilized CiteSpace—a bibliometric analysis software developed by Chen (2004, 2006, 2017; see also Chen et al. 2010; Chen & Song 2019). Bibliometric analysis provides an objective and quantitative approach to examining published literature within a specific research area (Chen 2020). The bibliographic data files collected from WoS were formatted in the Institute for Scientific Information Export Format, with “full record and cited references” selected as the content. This ensured that CiteSpace could readily recognize the files. After loading the files into CiteSpace, we executed the following procedural steps: time slicing, threshold setting, modeling, pruning, merging, and mapping (Chen 2006, 401-21).

Two distinct visualization analyses were conducted on the data in this study. One was document co-citation analysis, which helped identify pivotal documents in Anthropocene research. The other was keyword co-occurrence analysis, aimed at pinpointing the most frequently discussed areas in Anthropocene-related research.

3. Analysis

3.1 Journals, Productive Authors, and Institutions on the Anthropocene

Table 1 Top 10 most fruitful journals for the Anthropocene research

Rank	Journals	Published papers	Rank	Journals	Published papers
1	Cultural Studies	156	6	Philosophy	34
2	History	106	7	Geosciences, Multidisciplinary	33
3	Philosophy of Science	60	8	Environmental Studies	30
4	Anthropology	44	9	Archaeology	28
5	Sociology	37	10	Geography, Physical	25

The 504 articles and reviews analyzed in this study were distributed across multiple journals. Table 1 presents the top 10 journals with the highest publication output in this research area. Among them, Cultural Studies ranked first, with 156 publications on the Anthropocene. History and Philosophy of Science followed in second and third places, with 106 and 60 publications respectively. As shown in Table 1, most of these top 10 journals fall within the domains of cultural studies and environmental research.

The 10 authors having the highest number of publications in the Anthropocene are listed in Table 2. The authors with the most papers published on the Anthropocene were Simon, Zoltan Boldizsar (6) and Yusoff, Kathryn (6). Table 3. lists the 10 institutions having the highest number of published works in the Anthropocene. The University of London is at the top of this list with 28 publications in total, followed by the University of California System with 18 articles and University System of Ohio with 15 articles (Table 3).

Table 2 Top 10 most productive authors for the Anthropocene research

Rank	Authors	Published papers	Rank	Authors	Published papers
1	Simon, Zoltan Boldizsar	6	6	Luke, Timothy W.	4
2	Yusoff, Kathryn	6	7	Erlandson, Jon M.	3
3	Clark, Nigel	5	8	Chandler, David	3
4	Rosen, Arlene M.	4	9	Riebeling, Zachary	2
5	Blok, Vincent	4	10	Duara, Prasenjit	2

Table 3 Top 10 most productive institutions for the Anthropocene research

Rank	Institutions	Published papers	Rank	Institutions	Published papers
1	University of London	28	6	Max Planck Society	9
2	University of California System	18	7	University College London	9
3	University System of Ohio	15	8	University of Texas System	9
4	Lancaster University	10	9	Australian National University	9
5	Harvard University	10	10	University of Texas Austin	8

3.2 Document Co-citation Analysis

Citation frequency stands as a key metric within academic circles for evaluating the influence of a publication. The significance of a published work and its repercussions on the field are, to a certain extent, determined by the number of times it has been cited. Through the analysis of document co-citations, we can pinpoint the pivotal documents within a specific knowledge domain. CiteSpace proves to be an effective tool for carrying out such analyses.

Figure 1 Critical publications in the Anthropocene research



Table 4 The top 10 most cited publications in the Anthropocene study

Rank	Citation count	Author (year)	Publication name	Journal or press
1	37	Malm and Hornborg (2014)	The Geology of Mankind? A Critique of the Anthropocene Narrative	The Anthropocene Review
2	37	Lewis and Maslin (2015)	Defining the Anthropocene	Nature
3	31	Moore (2015)	<i>Capitalism in the Web of Life: Ecology and the Accumulation of Capital</i>	Verso books
4	27	Haraway (2015)	Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin	Environmental Humanities
5	24	Chakrabarty (2018)	Anthropocene Time	History & Theory
6	23	Waters (2016)	The Anthropocene is Functionally and Stratigraphically Distinct from the Holocene	Science
7	22	Steffen (2015)	The Trajectory of the Anthropocene: The Great Acceleration	The Anthropocene Review
8	20	Steffen et al (2011)	<i>The Anthropocene: Conceptual and Historical Perspectives</i>	Philosophical Transactions of the Royal Society A. University of Minnesota Press
9	17	Yusoff (2018)	<i>A Billion Black Anthropocenes or None</i>	University of Minnesota Press
10	15	Latour (2017)	Facing Gaia: Eight Lectures on the New Climatic Regime	John Wiley & Sons

Document co-citation analysis was performed on the 504 publications retrieved from WoS. Using CiteSpace, we visualized the 504 bibliographic records spanning from 2009 to 2024. A one-year time slice was adopted, with the top 50 most-cited papers selected for each year. To incorporate all references cited in these documents, regardless of their publication time, the Look Back Years (LBY) parameter was set to -1. Truncating long-range citation connections had a beneficial effect on result clarity: it enhanced the visibility of the network structure, as long-distance links often lead to a tangled, spaghetti-like network. The analysis results are presented in Figure 1, which includes 747 distinct nodes (representing cited publications) and 2056 linkages (representing co-citation relationships) across the entire dataset. Table 4

lists the top 10 most influential articles in Anthropocene research. Between 2009 and 2024, a total of 8 documents were cited more than 20 times. Notably, the third most-cited work globally in Anthropocene-related literature is a classic book focusing on ecology and capital in general, rather than the Anthropocene specifically.

In essence, this study centers primarily on narratives of the Anthropocene. The most frequently cited work in this context is by Malm and Hornborg (2014). Anthropocene narratives often depict humans as a species that has attained dominance over the rest of the Earth system. Within the critical realm of climate change, this perspective tends to link the burning of fossil fuels to traits developed during human evolution, most notably, the capacity to control fire. Yet, the fossil fuel-based economy is not a creation of all humans, nor does it enjoy universal support among humanity. This line of critique challenges the use of broad categorical labels in Anthropocene narratives, asserting that such an approach is analytically flawed and hinders practical action.

The second most frequently cited work is by Lewis and Maslin (2015). This piece has aided in reviewing the historical roots of the Anthropocene concept and assessing anthropogenic characteristics in the geological record against the formal criteria for recognizing a new epoch. The formal designation of the Anthropocene would signify a profound shift in the relationship between humans and the Earth system. The third most cited document is a book by Moore (2015), that is, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. In this work, Moore argues that the underlying cause of today's global turmoil is capitalism—a system for organizing nature, including human nature. Integrating insights from environmentalism, feminism, and Marxism, Moore presents a pioneering synthesis: capitalism as a “world-ecology” encompassing wealth, power, and nature. By reexamining capitalism through the dynamic, ever-renewing dialectic of humanity within nature, Moore guides readers through a narrative from capitalism's emergence to the complex web of crises in the modern era. *Capitalism in the Web of Life* demonstrates that critiquing “capitalism-in-nature” (as opposed to treating capitalism and nature as separate entities) is crucial to understanding our current predicament and advancing liberation-oriented politics in the coming century.

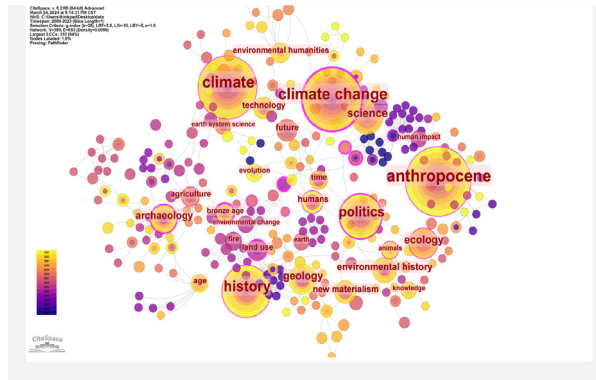
The remaining publications listed in Table 4 are explicitly tied to the Anthropocene concept within specific domains. In her article, Haraway (2015) posits that the spread of seed-dispersing plants millions of years prior to human agriculture constituted a planet-altering development, as did numerous other revolutionary events in evolutionary, ecological, and developmental history. As Haraway emphasizes, no species—including our own, which often arrogantly assumes the role of “good individuals” in the scripts of so-called modern Western thought—acts in isolation. Assemblages comprising both organic species and abiotic entities collectively shape history: the evolutionary kind, and all other forms of history as well.

Furthermore, Chakrabarty (2018, 5-32) explores “Anthropocene time” from multiple angles to uncover its underlying implications. In his article, he starts by questioning why the sense of geological time remains conspicuously absent in contemporary discussions of the Anthropocene within the human sciences, which instead tend to prioritize the more human-focused time frame of world history. In addition, Waters (2016) sought to identify evidence supporting the existence of the Anthropocene epoch. By combining an analysis of the deposition of new materials and radionuclides with human-induced changes to sedimentary processes, he endeavors to demonstrate that the Anthropocene is a stratigraphically distinct new epoch that began at some point in the mid-20th century. The last two publications mentioned here both argue that our current epoch should be distinguished from previous ones, while also raising related questions. Yusoff (2018) investigates how the grammar of geology has served as a foundational element in establishing the extractive economies of both subjective life and the earth itself under colonialism and slavery. Latour (2017) notes that over the past three centuries, new conceptions of nature have been continuously shaped by theology, politics, economics, and science—particularly the sciences focused on the material world.

3.3 Co-occurring Terms Analysis

Keywords in a paper serve as a reflection of its core theme and a concise summary of the subject matter to be explored. When two keywords appear together in a piece of writing, it signifies a close connection between them within the content of the work. The consensus is that the more frequently two or more terms co-occur, the stronger their association. Betweenness Centrality, a function within CiteSpace, quantifies the intensity of the relationship between two or more terms. This capability enables us to predict how a specific term might appear alongside others, even in related topics.

Figure 2 Keyword co-occurrence network

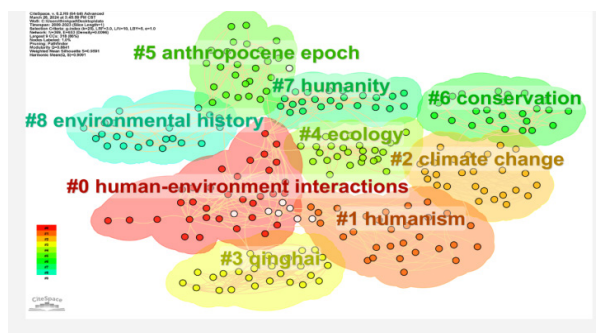


We analyzed keywords to pinpoint terms and phrases that co-occurred in at least two distinct publications. High-frequency terms are indicative of research hotspots within a specific field (Chen 2006, 368). For this study, a time slice length of 1 year was adopted. The analysis results revealed that the top 10 most frequent key terms are: anthropocene, climate change, climate, history, politics, science, ecology, geology, archaeology, and environmental history. The network of interrelated keywords is presented in Figure 2.

3.4 Cluster Interpretations

The clusters of keywords provide a structured and lucid overview of the key concepts and core elements involved in diverse studies on the Anthropocene. These clusters can illustrate which research directions are closely interconnected within Anthropocene-related inquiries. We utilized CiteSpace to conduct cluster analysis based on keyword co-occurrences, resulting in 369 nodes in the co-citation network with a 1-year time slice. The total nine greatest clusters in the research area of the Anthropocene are displayed in Figure 3. Within these clusters, warmer colors denote more recent research themes, while cooler colors indicate older ones, collectively showcasing the top nine keyword clusters. The clusters were labeled using index terms and identified via the log-likelihood ratio (LLR) method. The top nine clusters are named as follows: human-environment interactions, humanism, climate change, qinghai, ecology, Anthropocene epoch, conservation, humanity, and environmental history. The keyword co-occurrence cluster network diagram highlights the most prominent clusters in Anthropocene research.

Figure 3 A cluster illustration for keyword co-occurrence



Cluster #0, as the largest cluster, is labeled as “human-environment interactions”. The cluster refers to that humans and the environment have some unavoidable interactions in humanity research based on the keyword the Anthropocene. Agriculture and land use are two important aspects in human-environment interactions by researching the Anthropocene. Variation of HMEC in anthropogenic sediment in Hexi corridor is contemporaneous with the increases of the Cu concentrations in lacustrine sediment around 4000 BP (Zhang 2017, 93). Cluster #1 is labeled as “humanism”. This cluster has the most important keyword, that is “climate change”. Evidence indicates that among the various proposed start dates for the Anthropocene, two meet the criteria for marking its inception: 1610 and 1964. Navigating the Anthropocene from an African perspective requires treating scale as both an analytical tool and a category of actors (Hecht 2018). Thus, humanism emerges as an inescapable topic in Anthropocene research, and greater attention to it is essential for deepening the focus of related studies.

Cluster #2 is labeled as “climate change”. This cluster shows that over the past 15 years, researchers in the fields of the Anthropocene have intensively studied the role of climate change in the Anthropocene epoch. This line of inquiry includes efforts to examine how social and political agency is both constrained and enabled by the earth’s own forces (Clark and Yusoff 2017, 13). Cluster #3 is labeled as “qinghai”. This cluster focus on the research of qinghai in the Anthropocene epoch to find out the relationship between them and the behind reasons. Additionally, another study provided detailed insights into the late glacial landscape and vegetation development in Tibet (Schlütz and Lehmkuhl 2009, 1456).

Cluster #4 is labeled as “ecology”. Lorimer Jamie (2017) draws on the examples of rewilding nature reserves and reforming the human microbiome to critically assess this shift. Cluster #5 is labeled as “anthropocene epoch”. It indicates that this cluster primarily focuses on the core concept of the Anthropocene and its implications. Research within this cluster may delve into topics such as the defining characteristics of the Anthropocene, the debate surrounding its formalization as a geological epoch, and potential start dates or “golden spikes” that mark the beginning of significant human influence on the planet. Cluster #6 is labeled as “conservation”. This research cluster focuses on the preservation and protection of nature and biodiversity in the context of the Anthropocene. This cluster addresses various aspects of conservation, including strategies, policies, and management practices to mitigate the negative impacts of human activities on ecosystems, habitats, and species.

Cluster #7 is labeled as “humanity”. It suggests that this research cluster focuses on the human dimensions of the Anthropocene, examining how our species has become a dominant force shaping the planet’s systems and the implications for our future. Studying the ethical and philosophical dimensions of the Anthropocene can help us have a better understanding towards this concept, such as our responsibilities to future generations and the rights of non-human entities. Cluster #8 is labeled as “environmental history”. It indicates a focus on understanding the historical context and trajectories of human-environment interactions that have led to the Anthropocene. This cluster focuses on examining the historical roots of the Anthropocene and tracing the development of human societies alongside their evolving impacts on the environment over time. This keyword clustering provides a structured and clear overview of the core concepts involved in diverse strands of Anthropocene research, revealing which research lines are closely interconnected within this field.

3.5 Evolution of research hotspots

Depicting the general research focus areas can outline the developmental trajectory of the Anthropocene and offer a comprehensive, static, and outcome-oriented overall understanding of the field. The following research hotspot sought to identify the driving forces behind the Anthropocene, such as population growth, technological advancements, and economic development. With a clearer understanding of the drivers and consequences of the Anthropocene, the research focus turned towards developing sustainable solutions. This phase emphasized renewable energy, conservation efforts, and circular economies as potential pathways to address environmental challenges. This ongoing research hotspot highlights the importance of adaptive and collaborative governance systems in responding to complex environmental issues. Therefore, the evolution of research hotspots in Anthropocene studies demonstrates the dynamic and interdisciplinary nature of the field.

4. Conclusion

Through the visualization of a large amount of literature data by CiteSpace software, we found that the research on the concept of the Anthropocene has involved several disciplines, including earth sciences, ecology, environmental sciences, sociology, etc. Those research topics mainly focus on the definition of the concept of the Anthropocene, the impact of human activities on the Earth system, the geological characteristics of the Anthropocene, and the ecological and environmental effects of the Anthropocene. In this study, we collected a total of 504 bibliometric records from the Web of Science Core Collection, all of which were published between 2009 and 2024. Among journals, Cultural Studies and History—the only A&HCI journals dedicated to Anthropocene research—led in publication output, with 262 works on the Anthropocene. Bibliometric analyses conducted using CiteSpace software revealed that anthropocene, climate change, climate, history, and politics were the five most frequently occurring keywords. Additionally, the most prominent clusters identified were human-environment interactions, humanism, climate change, qinghai, and ecology. These results demonstrate that research on the Anthropocene has covered a wide range of diverse aspects.

From the results of bibliometric analysis, the future research on the concept of the Anthropocene will show the following trends: firstly, interdisciplinary research will be more in-depth, and the cross-fertilization of different disciplines will become an important direction of the research; secondly, empirical research will become the mainstream, and the specific impact mechanisms of human activities on the Earth system will be revealed through in-depth analysis of specific cases; thirdly, policy-oriented research will become the mainstream. Future research needs to pay more attention to interdisciplinary integration and empirical research, to provide strong support for global environmental governance and sustainable development.

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Observation of the technical normative teaching practice of soaring movements in martial arts long fist routines

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Abstract: The soaring action is the core technical link to measure the level and difficulty level of martial arts long fist routines. Its technical standardization directly affects the completion quality, artistic expression and competition results of the action. This paper sorts out the technical normative requirements of typical soaring movements (such as flying feet, whirlwind feet, and swinging lotuses) in the long fist routine through literature, teaching observation and logical analysis, and goes deep into the front line of teaching practice, observing and analyzing the common technical errors and their causes in current teaching. The study believes that normative teaching should be based on a deep understanding of the principles of movement biomechanics, follow the law of the technical chain of “run-up-jump-take-off-landing”, and adopt a teaching method that combines decomposition and completeness, and pays equal attention to assistance and protection. At the same time, in view of the common problems of insufficient take-off, loose air posture, and unstable landing, teaching improvement strategies such as strengthening special quality, optimizing teaching steps, and using modern feedback methods are proposed, in order to provide theoretical reference and practical basis for improving the teaching quality and training effect of long fist soaring action.

Keywords: Long Fist; Soaring Action; Technical Specifications; Teaching Practice; Sports Biomechanics

1 Introduction

Wushu Changquan is known for its posture stretch, strength and smoothness, distinct rhythm, and multiple jumps. Among them, the soaring jump is not only the key to the difficulty of the routine (group A) score, but also the highlight that reflects the physical fitness, technical level and mental outlook of the athletes ^[1]. With the continuous development and improvement of competitive martial arts rules, the requirements for the height, float, success rate of hitting, and landing stability of the take-off action are becoming increasingly stringent ^[2]. Therefore, how to teach the soaring action technique scientifically and standardly in teaching, so that students can complete the movements with high quality, has become an important topic in martial arts teaching and training.

Although the soaring action is very important in the routine, in daily teaching practice, due to the difference in students' physical fitness, vague technical concepts, improper teaching methods, etc., there are generally non-standard movements and low quality of completion. This not only affects the overall practice effect of the routine, but also increases the risk of sports injuries ^[3]. Based on the observation of teaching practice, combined with the theory of sports biomechanics and the research results of previous people, this paper conducts an in-depth discussion on the standardized teaching of long fist soaring action, aiming to summarize effective teaching experience, discover and solve practical problems, and promote the scientific and standardized process of martial arts teaching.

2 Research objects and methods

2.1 Research objects

The research object of this study is the teaching practice focused on the technical standardization of typical aerial movements (Flying Kick, Whirlwind Kick, Lotus Kick) in Wushu Changquan routines.

2.2 Research methods

2.2.1 Literature method

Through the China National Knowledge Infrastructure (CNKI) database, the keywords “long fist”, “soaring action”, “technical analysis” and “teaching training” were searched, and relevant journal papers and dissertations in the past ten years were consulted, and the techni-

cal principles, teaching methods and common problems of the soaring action were systematically sorted out, which provided solid theoretical support for this study.

2.2.2 Teaching observation method

In-depth martial arts general course and sports team training course of a sports college for a semester of teaching practice observation, focusing on recording the technical performance of students in each link (run-up, stepping and jumping, aerial posture, landing) when learning the above-mentioned take-up actions, especially the common wrong movements.

2.2.3 Logical analysis method

summarizes, analyzes and synthesizes the observed and collected information, logically derives the causes of technical errors from the perspective of biomechanics and motor skills formation laws, and puts forward corresponding teaching countermeasures.

3 Observation and analysis of technical specifications and teaching practice of long fist soaring action

3.1 Key points of technical specifications for the core take-off action

3.1.1 Technical specifications for take-off and flying feet Requirements: coherent run-up steps, full pedaling and extension of the last step of the step-up leg, swinging legs to swing up quickly, when the body is close to the highest point after takeoff, the top of the foot of the high-five palm should be accurate and loud, the upper body should be slightly forward, standing up, and lifting the air. When landing, the front foot transitions, and the knee is bent for cushioning ^[4].

3.1.2 Technical specification requirements for whirlwind feet: At the moment of stepping and jumping, the upper body cooperates and twists, swings the leg inside, and the other leg swings in the air in a whipping style, and the body rotates more than 360° around the sagittal axis. The whole action requires rapid turning, high floating legs, and accurate hitting. When landing, the body faces the direction of take-off and remains stable ^[5].

3.1.3 Technical specification requirements for the soaring lotus: This is a compound soaring action that combines turning and swinging legs. After stepping and jumping, the body is lifted and rotated more than 180°, one leg is inside, and the other leg is swinging outward, and it is fanned into a fan. The movement requires the rotation and leg technique to be coordinated, and the body has a “sense of soaring” in the air, and the landing is light and stable ^[6].

3.2 Common Technical Errors Observed in Teaching Practice

Through teaching observations, the following common issues have been identified among students during the learning process:

1. Run-up and take-off link: The last step of the run-up is too big or too small, resulting in weakness in stepping and jumping; The stepping and jumping legs are not fully extended, and the knee and ankle joints are too flexed, which cannot effectively convert the horizontal speed into vertical jumping force; The swing arm and swing leg are not coordinated and fail to form a joint force ^[7].

2. Aerial posture link: Insufficient core strength, resulting in loose body in the air, collapsed waist, hip sitting and other phenomena; Turning movements (such as whirlwind feet) raise their heads too early or too late, resulting in skewed rotation axis and slow rotation; The flexibility and speed of the striking leg are not sufficient, and the striking is inaccurate or cannot be completed.

3. Landing stability: Lack of concentration when landing, poor control of the body's center of gravity; The knee joint is not cushioned or over-cushioned at the moment of landing, resulting in body shaking, falling and even knee joint injury ^[3].

4 Discussion of normative teaching strategies based on observation

In view of the above-mentioned practical problems, normative teaching should be strengthened from the following aspects:

4.1 Building a Solid Foundation and Enhancing Sport-Specific Physical Conditioning

The quality of aerial movement execution is highly dependent on lower limb explosive power, core strength (abdominal and lumbar region), hip flexibility, and coordination. In the initial stages of instruction, it is imperative to incorporate a substantial volume of targeted

auxiliary exercises, such as:

- Jumping ability: continuous single-legged jumps, stride jumps, deep jump exercises, etc.
- Core strength: Supine leg raises, biceps, planks, etc.
- Flexibility and coordination: front and side leg presses, inner and outer swing leg exercises, as well as imitation arm swing jump exercises in situ.

4.2 Optimizing the Technical Learning Process Through Part-Whole Training

This method adheres to the principles of motor skill acquisition by employing a “part-whole” teaching approach. Taking the Whirlwind Kick (Xuanfeng Jiao) as an example, the technique can be broken down into the following progressive steps:

- ?Step 1: Practice in place or in the upper step to solve the problem of leg method route and ringing.
- ?Step 2: Turn around and practice 360° jumping on the spot to establish a sense of time and space when turning your body.
- ?Step 3: Step up and jump to practice turning the body (without adding leg method) to experience the cooperation between stepping and turning the body.
- Step 4: Complete the full action with protection and help, gradually transitioning to independent completion^[8]. This method can effectively reduce the difficulty of learning and help students establish correct movement concepts.

4.3 Utilizing Technology-Enhanced Feedback in Modern Teaching

Use feedback and make full use of video feedback technology with the help of modern teaching methods. Record students' movements and slow down and compare them with the standard movements of outstanding athletes, so that students can intuitively see the gaps in their own skills, such as stepping and jumping angles, body posture, etc., which is one of the most effective means to correct wrong movements^[9].

4.4 Implementing Safety Measures for Injury Prevention

Strengthen protection and prevent sports injuries Especially in the early stage of learning the rotation of the body, teachers should personally or arrange for students to provide protection and help, such as standing on the side of the student's turning direction and gently pushing his waist and back when he takes off to help him complete the rotation and land stably. This not only prevents sports injuries, but also enhances students' confidence in completing the movement.

5 Conclusions and recommendations

5.1 Conclusion

1. The technical standardization of the long fist soaring action is reflected in the four aspects of “high, floating, stable and accurate”, and its completion is a system project closely connected by the four links of run-up, stepping and jumping, take-off and landing.
2. In teaching practice, students' technical errors are mainly concentrated in three links: low take-off efficiency, poor air attitude control and unstable landing, which are rooted in insufficient physical fitness, unclear technical concepts and single teaching methods.
3. Normative teaching must be based on scientific analysis, and a multi-pronged approach can effectively improve the teaching effect by strengthening special quality, optimizing and decomposing the teaching process, using video feedback and strengthening protection and help.

5.2 Recommendations

1. For teachers, they should deeply study the biomechanical principles of soaring actions and improve their ability to detect and correct wrong movements.
2. For students, they should pay attention to the training of basic physical fitness, patiently complete each decomposition exercise, and gradually consolidate the correct movement form.
3. For teaching units, high-speed cameras, force plates and other equipment can be actively introduced to carry out more refined tech-

nical diagnosis and promote the development of martial arts teaching in the direction of digitalization and science.

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A Study on the Interpretation and Misinterpretation of Non - verbal Signs in Cross - cultural Communication

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Abstract: Non - verbal signs play a crucial role in cross - cultural communication, carrying rich cultural connotations. However, due to cultural differences, misinterpretations often occur, hindering effective communication. This paper, based on relevant theories of cross - cultural communication, analyzes the types of non - verbal signs and their interpretations in different cultures, and explores the reasons for misinterpretations, aiming to provide practical suggestions for improving cross - cultural communication ability. By studying non - verbal signs such as body language, facial expressions, space and time, this paper reveals the complexity of cross - cultural communication and emphasizes the importance of understanding cultural differences to avoid misinterpretations and promote smooth cross - cultural exchanges.

Keywords: Cross - Cultural Communication; Non - Verbal Signs; Interpretation; Misinterpretation

1 Introduction

In the context of globalization, cross - cultural communication has become increasingly frequent. Non - verbal signs, as an important part of communication, account for a large proportion in the communication process. American scholars L. Birdwhistell estimates that in a two - person communication situation, 75% of social meanings are conveyed through non - verbal signs. Another scholar, Albert Mehrabian, proposed a formula: communication understanding = intonation (38%)+ expression (55%)+ language (7%), which further demonstrates the significance of non - verbal signs in communication.

Non - verbal signs refer to symbol systems that use other visual, auditory and other symbols as information carriers instead of artificial natural languages. They can be divided into two main categories: visual non - verbal signs and auditory non - verbal signs. Visual non - verbal signs include body language (such as gestures, postures, facial expressions, eye contact, touch), spatial distance, and static visual elements (such as clothing, environmental layout). Auditory non - verbal signs include paralinguistic (such as intonation, volume, speed of speech) and other sounds (such as sighs, laughter, music).

However, in cross - cultural communication, due to the influence of different cultural backgrounds, the interpretations of non - verbal signs vary greatly, often leading to misinterpretations. These misinterpretations may cause communication barriers, misunderstandings between people, and even affect the success of cross - cultural communication in various fields such as business, education, and diplomacy. Therefore, studying the interpretation and misinterpretation of non - verbal signs in cross - cultural communication has important theoretical and practical significance.

2 Literature Review

Research on non - verbal signs in cross - cultural communication has been an important topic in the field of cross - cultural communication in recent years. Many scholars at home and abroad have conducted in - depth research from different perspectives.

In terms of the classification of non - verbal signs, Samovar et al. (2019) divided non - verbal communication into eight categories, including body movement, body characteristics, paralinguistics, space language, time language, object language, environmental language and silence. This classification comprehensively covers various forms of non - verbal signs, providing a clear framework for subsequent research.

Regarding the cultural differences in the interpretation of non - verbal signs, Hall (2020) proposed the theory of high - context and low - context cultures. High - context cultures, such as those in East Asia, rely more on non - verbal information and context in communication, while low - context cultures, such as those in the United States, tend to rely more on explicit language. This theory helps to explain why there are significant differences in the understanding of non - verbal signs between different cultures.

In terms of misinterpretations of non - verbal signs, Scollon and Scollon (2018) pointed out that misinterpretations often occur because

people unconsciously use their own cultural norms to interpret the non - verbal behavior of others. For example, in Western cultures, direct eye contact is often regarded as a sign of confidence and sincerity, while in some Asian cultures, excessive eye contact may be considered impolite.

Domestic scholars have also made a lot of contributions. Hu Wenzhong (2021) analyzed the influence of cultural differences on non - verbal communication from the aspects of values, thinking patterns and social norms, emphasizing the importance of understanding cultural differences in cross - cultural communication. Gao Yongwei (2022) studied the misinterpretations of body language in cross - cultural communication, such as the different meanings of gestures in different cultures, and proposed corresponding countermeasures to avoid misinterpretations.

However, current research still has some limitations. For example, most studies focus on the differences in the interpretation of non - verbal signs between two specific cultures, lacking a comprehensive comparison and analysis of multiple cultures. In addition, the research on the solutions to misinterpretations of non - verbal signs in cross - cultural communication needs to be further deepened. This paper attempts to make up for these deficiencies by comprehensively analyzing the interpretation and misinterpretation of non - verbal signs in cross - cultural communication and putting forward more practical suggestions.

3 Types of Non - verbal Signs and Their Interpretations in Different Cultures

3.1 Body Language

3.1.1 Gestures

Gestures are one of the most common forms of body language. In Western cultures, the “OK” gesture, with the thumb and index finger forming a circle and the other three fingers extended, usually means “agree”, “good” or “everything is fine”. However, in some cultures, such as Brazil and Greece, this gesture has vulgar or offensive meanings. In Japan, it can represent “money”. Another example is the “thumbs - up” gesture. In Western countries, it generally means “good”, “excellent” or “approval”. But in some Middle Eastern countries, this gesture may be considered disrespectful.

3.1.2 Postures

Postures can also convey rich information. In Western business cultures, standing or sitting upright is often seen as a sign of confidence and professionalism. For example, in a business negotiation, a person who sits straight, with his shoulders back and head held high, is likely to be regarded as self - assured and in control of the situation. In contrast, in some Asian cultures, such as Japan, a more humble posture, like slightly bowing when sitting or standing, is considered polite and respectful. When meeting someone of higher status, the Japanese may bow deeply, with the angle of the bow indicating the degree of respect.

3.1.3 Facial Expressions

Facial expressions are considered to have certain universality in expressing basic emotions. For example, a smile is generally recognized as a sign of happiness, friendliness or agreement across cultures. However, the specific meaning of a smile can also vary. In Western cultures, a broad smile is often used to show genuine joy or enthusiasm. In Japanese culture, a smile may also be used to cover up embarrassment, discomfort or negative emotions. When facing an awkward situation, a Japanese person may smile to ease the tension, which may be misinterpreted as not taking the situation seriously by people from Western cultures.

3.1.4 Eye Contact

Eye contact varies significantly across cultures. In Western cultures, especially in the United States, maintaining direct eye contact during communication is seen as a sign of respect, attention, and honesty. A person who avoids eye contact may be suspected of lying or lacking confidence. In contrast, in many Asian, African and Latin American cultures, people may avoid direct and prolonged eye contact, especially when communicating with someone of higher status. For instance, in traditional Chinese culture, when talking to elders or superiors, lowering one's eyes slightly is considered a sign of respect.

3.1.5 Touch

The attitude towards touch also differs among cultures. In Western cultures, especially in the United States and some European coun-

tries, a handshake is a common form of greeting among acquaintances and in business settings. Hugging and kissing on the cheek are also common among family members, close friends and in some social occasions. In Latin American and Middle Eastern cultures, physical contact during communication is even more frequent. People may stand closer, touch each other's arms or shoulders during conversation to show friendliness and intimacy. However, in some Asian cultures, such as Japan and South Korea, people are more reserved about physical contact. Excessive touch in public may make them feel uncomfortable, and a simple bow is often the preferred form of greeting.

3.2 Spatial and Temporal Non - verbal Signs

3.2.1 Spatial Distance

The concept of personal space, which refers to the physical space an individual likes to maintain around themselves, varies across cultures. In Western cultures, particularly in the United States and northern Europe, people generally prefer a relatively large personal space. In a conversation, they may stand about an arm's length or more apart. In a waiting room, they tend to choose seats that are not too close to others. In contrast, in Middle Eastern, Latin American and some Asian cultures, people are more comfortable with a closer spatial distance. In these cultures, people may stand or sit close to each other during communication, and this close proximity is not seen as an invasion of personal space but rather as a sign of friendliness and intimacy.

3.2.2 Time

Time perception also has cultural differences. Western cultures, especially those in North America and northern Europe, generally have a monochronic time orientation. They view time as a linear and precious resource, emphasizing punctuality, scheduling and efficiency. For example, in a business meeting in the United States, starting and ending on time is of great importance. Being late is often considered disrespectful and unprofessional. In contrast, many Latin American, African and some Asian cultures have a polychronic time orientation. They view time as more flexible and cyclical, and relationships and social interactions are often given more priority than strict time schedules. In these cultures, it is not uncommon for meetings to start late or for people to engage in multiple activities simultaneously without feeling rushed.

4 Reasons for Misinterpretations of Non - verbal Signs in Cross - cultural Communication

4.1 Cultural Relativism

Cultural relativism is one of the main reasons for misinterpretations of non - verbal signs. People tend to interpret the non - verbal behavior of others based on their own cultural norms and values. Since different cultures have different understandings of non - verbal signs, when individuals from one culture encounter non - verbal behavior from another culture, they may unconsciously use their own cultural standards to judge, resulting in misinterpretations. For example, in Western cultures, people are accustomed to expressing emotions directly through body language, while in some Asian cultures, emotions are expressed more subtly. A Westerner may misinterpret the reserved body language of an Asian as lack of interest or enthusiasm because they are using their own cultural concept of body language expression.

4.2 Lack of Cross - cultural Awareness

Lack of cross - cultural awareness is also a common cause. Many people are not aware of the significant differences in non - verbal signs among different cultures. They may assume that non - verbal communication is universal and ignore the cultural background. For instance, a person who is not familiar with the cultural differences in eye contact may feel offended when someone from a different culture avoids looking directly at them during a conversation, not realizing that it is a cultural norm in that person's culture. In international business negotiations, if negotiators lack cross - cultural awareness of non - verbal signs, they may misinterpret the opponent's body language, such as gestures or postures, which could affect the outcome of the negotiation.

4.3 Stereotyping

Stereotyping can lead to misinterpretations of non - verbal signs. Stereotypes are fixed and oversimplified beliefs about a particular

group of people. When people have stereotypes about a certain culture, they may misinterpret the non - verbal behavior of individuals from that culture. For example, if someone has a stereotype that all people from a certain Asian culture are shy and introverted, they may misinterpret the normal body language of an individual from that culture as shyness, even if the person is just behaving according to their cultural norms. Stereotyping ignores the individuality within a culture and the complexity of non - verbal communication, thus increasing the likelihood of misinterpretation.

5 Strategies for Avoiding Misinterpretations of Non - verbal Signs in Cross - cultural Communication

5.1 Enhancing Cross - cultural Education

Enhancing cross - cultural education is crucial. Schools, especially universities, can offer more courses on cross - cultural communication, including in - depth studies of non - verbal signs in different cultures. These courses can use real - life cases, videos and role - playing to help students understand the differences in non - verbal communication among various cultures. For example, in a cross - cultural communication course, students can analyze the different meanings of gestures in Western and Eastern cultures through watching videos of people from different cultures communicating. In addition, companies can also provide cross - cultural training for employees who are involved in international business. This training can focus on the non - verbal communication norms in the target countries, so as to help employees avoid misunderstandings in cross - cultural business negotiations.

5.2 Developing Cross - cultural Awareness

Individuals should actively develop cross - cultural awareness. This requires people to be open - minded and willing to learn about different cultures. When communicating with people from different cultures, one should be aware that their non - verbal behavior may be different from what they are used to and should avoid making hasty judgments. For example, when traveling abroad, people can observe and learn the local non - verbal communication habits, such as how people greet each other, what kind of body language they use in public places. By being sensitive to cultural differences, individuals can better understand the non - verbal signals of others and reduce the possibility of misinterpretation.

5.3 Practicing Empathy

Practicing empathy is an effective strategy. Empathy means being able to put oneself in the other person's position and understand their feelings and perspectives. In cross - cultural communication, when encountering non - verbal behavior that is difficult to understand, instead of judging based on one's own cultural background, one should try to think from the perspective of the other person's culture. For example, if a person from a Western culture is confused by the lack of direct eye contact of an Asian counterpart, they can try to understand that in the Asian culture, this may be a sign of respect. By practicing empathy, people can build better relationships with people from different cultures and avoid misunderstandings caused by cultural differences in non - verbal signs.

6 Conclusion

Non - verbal signs are an essential part of cross - cultural communication, carrying diverse cultural connotations. However, due to cultural differences, misinterpretations of non - verbal signs are common in cross - cultural communication, which may pose obstacles to effective communication. By understanding the different types of non - verbal signs and their interpretations in various cultures, as well as the reasons for misinterpretations, and taking corresponding strategies such as enhancing cross - cultural education, developing cross - cultural awareness and practicing empathy, people can improve their cross - cultural communication ability, avoid misinterpretations of non - verbal signs, and promote smooth cross - cultural exchanges. In the future, with the continuous deepening of globalization, further research on non - verbal signs in cross - cultural communication is needed to better adapt to the needs of cross - cultural communication in different fields.

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Construction of an evaluation system for the cultivation of medical humanities during the internship stage of medical students

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Abstract: The medical humanities of medical students are crucial to the quality of medical services, especially during the internship stage. This article discusses the construction of an evaluation system for the cultivation of medical humanities during the internship stage of medical students. First, the basic conditions for the cultivation of medical humanities are analyzed, mainly including the principles of patient-centeredness, interdisciplinary collaboration, and the integration of theory with practice. Second, the principles for constructing an evaluation system for the cultivation of medical humanities are proposed, highlighting ethical education, comprehensive quality cultivation, and practice-oriented teaching methods. Finally, a complete evaluation system is constructed to promote the improvement of medical students' humanities by designing a multi-dimensional evaluation framework, case analysis teaching methods, teacher-student interaction mechanisms, and interdisciplinary integration courses.

Keywords: Medical Students; Internship Stage; Medical Humanities; Evaluation System

Introduction

In today's booming medical industry, medicine not only requires professional skills, but also requires doctors to have good medical humanities. In particular, the cultivation of medical humanities during the internship stage of medical students is particularly critical. This stage is not only a transitional period for students to apply theoretical knowledge to practical work, but also an important stage for shaping their own professional literacy, ethical concepts, and communication skills. However, the current humanistic quality training and evaluation system for medical students has not received enough attention. The purpose of this study is to explore the construction method of the medical humanistic quality training and evaluation system for medical students during their internship, in order to propose feasible improvement strategies for medical schools.

1 Requirements for the training of medical humanistic quality during the internship stage of medical students

The training of medical humanistic quality during the internship stage of medical students should focus on enhancing ethics and professional responsibility, improving patient communication skills, and teamwork and interdisciplinary cooperation. The central goal of this stage is not only to enable students to acquire basic medical knowledge and operational skills, but more importantly, to cultivate students' comprehensive humanistic qualities to ensure that they can find a balance between technology and emotions in their future medical work. The training of medical humanistic quality first needs to have a deep ethical education, requiring students to always put patients first, respect patients' rights and privacy during treatment, and reflect a high sense of professional ethics and responsibility. At the same time, medical students should be able to deal with complex ethical issues such as bioethics, euthanasia and informed consent, so that they will not infringe on patients' basic rights in various ways. Secondly, the training of medical humanistic quality requires medical students to have good communication skills. During the clinical internship, students need to establish a trusting relationship with patients and communicate effectively with patients' families, colleagues and other medical team members, and coordinate resources from all parties to achieve the best therapeutic effect. Good communication skills help students understand patients' needs, relieve patients' emotions, enhance mutual trust between doctors and patients, and then improve the quality of medical services.

2 Principles for constructing an evaluation system for the cultivation of medical humanities during medical students' internships

2.1 Patient-centered ethical education principle

In the construction of a medical humanities cultivation and evaluation system during medical students' internships, the patient-centered ethical education principle is one of the core principles. This principle emphasizes that medical students should always put patients' needs, will and interests first in clinical practice, and pay attention to patients' physical and mental health and dignity. Medical education should strengthen ethical courses, infiltrate ethical education in all aspects of internships, and help students establish correct values and behavioral norms. Patient informed consent, privacy protection, and respect for patients' right to choose are the core elements of this principle. Medical students must strengthen their ethical decision-making ability training during their internships to help them understand the social responsibility and professional ethics of doctors, especially how to make ethical choices in complex clinical situations. In addition, the ethical education concept of putting patients first also emphasizes that medical students need to have the skills to deal with ethical conflicts. Faced with different needs of patients, expectations of their families and suggestions of the medical team, medical students must have a certain ethical judgment to ensure that all decisions are based on the best interests of the patients. This ethical judgment ability is not simply extracted from book theory, but can only be developed in real interactions with patients and their families and in the analysis of clinical cases. To this end, medical schools should use simulated situations and case analysis as a means to help students improve the depth and breadth of their ethical education as a whole during internships, in order to ensure that they can always adhere to patient-oriented professional ethics in the complex medical environment in the future.

2.2 Principles of interdisciplinary collaboration and comprehensive quality training

The principle of interdisciplinary collaboration and comprehensive quality training emphasizes that medical students should attach importance to the cultivation of interdisciplinary cooperation ability during the internship stage and promote the improvement of students' comprehensive quality. This principle is not limited to the training of medical students' clinical skills, but their teamwork ability, communication ability and problem-solving ability. Modern medicine is no longer completed independently by a single professional doctor, but relies on multidisciplinary team cooperation and communication. During the internship, medical students need to participate in multidisciplinary teamwork and learn how to communicate and collaborate efficiently with people from different professions (e.g., nurses, pharmacists, nutritionists, psychologists), so as to provide patients with more comprehensive and accurate treatment plans. In interdisciplinary cooperation, medical students not only need to have a solid medical foundation, but also must have an attitude of understanding and respect for the professional knowledge and views of other disciplines. For example, doctors must work closely with pharmacists to ensure the rational use of drugs; cooperate with nutritionists to formulate diet plans for patients; and cooperate with psychologists to solve patients' emotional and psychological problems. Therefore, medical education should attach importance to the cultivation of medical students' interdisciplinary communication skills and teamwork spirit, so as to effectively coordinate various resources and provide comprehensive treatment plans for patients. In addition, medical students need to develop critical thinking and comprehensive analysis skills, analyze problems from multiple angles and provide the best solutions.

2.3 Teaching principles combining practice orientation and theory

The teaching principle combining practice orientation and theory emphasizes that medical students should attach importance to both theoretical knowledge and the connection between theory and practice during the training process. The ultimate goal of medical education is to train doctors who can solve practical clinical problems, which requires a solid foundation of theoretical knowledge and proficiency in clinical skills. Medical students need to undergo a lot of clinical practice during their internship to consolidate and deepen their theoretical knowledge, especially when they encounter real cases, they can flexibly apply the medical principles they have learned to diagnose and treat. Practice-oriented teaching requires medical students to continuously accumulate experience in a real clinical environment, and to promote

the improvement of their clinical operation ability and problem-solving skills through contact with various diseases and patients. At the same time, the teaching model that combines theory with practice also requires students to constantly reflect and summarize in the process of practice, so as to further deepen their medical knowledge. This combination is conducive to the transformation of students' academic theories into clinical operation skills, and is also conducive to students making rational medical judgments in the face of complex cases. In addition, the teaching model that combines practice-oriented and theory will also encourage medical students to participate in scientific research projects, and further improve their ability to analyze and solve problems through research-based teaching, so that they can comprehensively apply the knowledge they have learned to solve problems in reality.

3 Path to constructing an evaluation system for cultivating medical humanities during the internship stage of medical students

3.1 Design and implementation of a multidimensional evaluation framework

Constructing a multidimensional evaluation framework is an effective means to ensure that medical students cultivate medical humanities during the internship stage. The core of this framework is to take into account the embodiment of students' medical professional knowledge, humanities literacy, professional ethics, communication skills, and teamwork ability. A complete multidimensional evaluation system should not only be based on students' technical operation ability, but also on students' attitudes, behaviors, clinical ethics, patient communication, and psychological care. Taking some medical institutions as an example, a three-dimensional evaluation model is applied to them: first, through self-evaluation, students' understanding of themselves is strengthened, prompting them to reflect on and reflect on their communication with patients, their attitudes towards patients, and their performance in the group; second, the teacher conducts the evaluation and observes the students' clinical practice, such as whether they respect the privacy of patients and whether they can put patients first; finally, through patient feedback and team member evaluation, especially the performance of clinical skills and interpersonal communication. For example, through the feedback of patients on the service attitude of medical students, the feelings of the doctor-patient relationship, and the degree of acceptance of treatment plans, their medical humanities quality can be comprehensively evaluated. In addition, the comprehensive use of dynamic evaluation and quantitative indicators is an important part of the multidimensional evaluation framework. For example, a medical school uses patient feedback and medical team evaluation systems to conduct continuous, practical evaluation data research on each intern, and uses a data analysis platform to analyze the performance of each intern in real time.

3.2 Innovation of teaching methods based on case analysis

Case analysis teaching method is an innovative medical humanities quality education method that helps students deepen their understanding of the combination of theoretical knowledge and clinical practice, especially for the handling of complex humanities and ethical issues, which requires students to integrate medical technology and humanistic care. By analyzing specific cases, students can exercise their clinical judgment and ethical decision-making abilities in real situations. Under some advanced teaching models, medical students need to consider individual cases from multiple perspectives such as ethics, sociology, psychology and medicine. As an example, a hospital has opened a course called "Ethical Decision-making Simulation, etc." In this course, students need to analyze whether a terminal cancer patient chooses to continue treatment or enter the stage of palliative care. During the simulation process, students need to understand the emotional appeals of patients and their families, take into account medical ethics, patient quality of life and other factors, give reasonable suggestions, and communicate with patients and their families. This teaching method not only tests students' clinical decision-making ability, but also their communication skills and sensitivity to patients' needs. In addition, the application of digital tools also promotes continuous innovation in case teaching. For example, by introducing virtual reality technology, students can deeply participate in the complex ethical decision-making process, and feel the pain caused by the disease and the possible side effects during the treatment process from the patient's perspective. Through such an immersive learning method, students can have a deeper understanding of the connotation of medical humanities and truly feel the social responsibility and humanistic care that medical workers must bear.

3.3 Optimization of the interactive feedback mechanism between teachers and students

The interactive feedback mechanism between teachers and students is the core link to promote the development of medical humanities quality. An effective feedback mechanism can not only help students recognize their own progress and shortcomings in a timely manner, but also encourage students to continuously improve their humanistic qualities and clinical abilities during clinical internships. Traditional medical education feedback is usually limited to technical operations and ignores feedback on students' professional attitudes, ethical judgments, and communication with patients. To this end, it is necessary to optimize the interactive feedback mechanism between teachers and students on the basis of the traditional model to form a diversified, dynamic, and continuous feedback system. For example, a medical center implemented the teaching model of "instant feedback, regular evaluation". During the students' clinical internship, as long as they complete a certain link or encounter a difficult problem, the teacher should give specific feedback in a timely manner, not just to test the operation skills, but also to guide the students based on their humanistic qualities, such as whether they actively communicate with patients and whether they respect the patients' wishes. In addition, there will be a comprehensive feedback meeting every month. In addition to testing students' medical skills, students' humanistic qualities can also be evaluated from various angles. Student feedback is not limited to teachers. Patients can also use questionnaires, interviews and other methods to provide feedback on students' communication skills, service attitudes, etc. This two-way feedback mechanism promotes students' self-reflection and helps them better integrate patient needs and humanistic care in practice. Optimizing the feedback mechanism can enable medical students to have a clearer understanding of their own deficiencies in professionalism, humanistic qualities, etc., so as to make improvements.

3.4 Construction and implementation of interdisciplinary integration courses

Modern medical education is no longer limited to the teaching of professional knowledge. It also requires extensive interdisciplinary integration to cultivate medical students' comprehensive judgment and teamwork ability in complex clinical environments. The cultivation of medical humanistic qualities has just been expanded through the cross-disciplinary integration, especially the integration of psychology, sociology and ethics. For example, a medical school has opened a cross-course of "Medical Ethics and Social Psychology". In this course, medical students not only learn the basic theories of medical ethics, but also understand the needs and behaviors of patients from the perspectives of sociology and psychology. In the course, students need to analyze some clinical cases, such as elderly patients' care decisions and psychological problem intervention, and propose solutions in combination with relevant psychological theories. In addition, interdisciplinary courses have the advantages of promoting the development of students' diversified thinking. For example, when medical students work in teams, they need to work with social workers, psychologists, nurses and other interdisciplinary experts, stand from different disciplinary perspectives, conduct a comprehensive analysis of patient needs, and provide patients with more comprehensive treatment plans. This interdisciplinary education model can not only promote the improvement of students' comprehensive quality, but also strengthen their communication ability and cooperation spirit with multidisciplinary teams, thus laying a solid foundation for future medical work.

3.5 Dynamic feedback system for continuous evaluation and improvement

The dynamic feedback system that is constantly evaluated and improved is an important guarantee to ensure the continuous improvement of medical students during the internship stage. The growing development of the medical industry has brought more and more demands on doctors, so the cultivation of medical students' humanistic qualities needs to be continuously tracked and dynamically evaluated throughout the internship process. The core of this system is to help students find problems and make timely improvements through periodic evaluation and real-time feedback. A hospital regularly evaluates interns' medical skills, humanistic qualities, communication skills and teamwork by building an intelligent evaluation platform. Feedback from patients, instructors and peers can make medical students clearly aware of their progress and shortcomings in various aspects. For example, patient satisfaction surveys and ward team evaluations are important bases for assessing the level of medical humanistic qualities of medical students. Students receive multi-dimensional feedback information from patients, instructors and peers every month, and formulate personal development plans based on the evaluation results. In addition, the dynamic feedback system includes regular self-reflection and evaluation during the internship to ensure that students deepen their understanding of

medical humanistic qualities through continuous self-evaluation, and continuously adjust their learning strategies based on their grades. This constantly improving feedback system not only helps students improve their clinical abilities in a short period of time, but also has a certain supporting role in their long-term career development.

3.6 Long-term mechanism guarantee for medical humanistic quality training

In order to ensure the sustainability and long-term effectiveness of medical humanistic quality training, a sound guarantee mechanism should be established. This mechanism should not only cover the entire learning process of medical students, but also have a lasting effect on improving their humanistic qualities in their careers. Some medical institutions and medical schools have realized the importance of cultivating humanistic qualities and have begun to build a “lifelong education” model to continuously cultivate medical humanistic qualities for doctors. These institutions have included medical humanistic qualities as core courses for students and in the continuing education of in-service doctors. For example, a hospital has built a medical humanistic quality evaluation platform based on big data. After joining the hospital, doctors will often participate in humanistic quality training, self-evaluate and continue to learn through this platform. In addition, the hospital regularly holds interdisciplinary humanistic quality forums and invites sociologists, psychologists and other experts to communicate with doctors to improve their humanistic qualities. Through the guarantee of this long-term mechanism, medical humanistic quality training has become both a phased goal and a continuous education throughout the entire medical career, thus ensuring the cultivation of high-quality humanistic care physicians in the medical industry.

Conclusion

Cultivating medical humanistic qualities is of great significance to the comprehensive development of medical students. By constructing a scientific and systematic evaluation system, it can not only effectively improve the professional quality of medical students but also promote the continuous optimization of medical humanistic education. The evaluation system path and construction principles proposed in this study have certain practical significance and are valuable for future medical education reform. It is expected that with the promotion and application of this system, medical personnel with high humanistic qualities can be better trained to better serve patients and society.

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A Comparative Study of Chinese and British Tea Culture from the Perspective of Hofstede's Cultural Dimension Theory

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Abstract: This study conducts a comparative analysis of tea culture differences between China and Britain using Hofstede's Cultural Dimensions Theory. By applying Hofstede's framework, the study highlights that Chinese tea culture tends to embody characteristics of individualism and masculinity, while British tea culture reflects individualistic traits alongside more feminine qualities in its drinking etiquettes. The ultimate goal of this research is to enhance understanding of the cultural variances between the two nations, reduce conflicts stemming from cultural misunderstandings, promote effective cross-cultural communication, and provide valuable insights for cultural exchange initiatives and encourage the dissemination of cultural knowledge between China and Britain.

Keywords: Intercultural Communication; Chinese and British Tea Culture; Hofstede's Cultural Dimension Theory

1 Introduction

Tea culture, originating in ancient China, traces its mythical beginnings to Emperor Shen Nong (2737 BCE). Evolving from medicine to a cultural staple, tea influenced Chinese art, literature, and social customs. Through trade and diplomacy, tea spread globally, reaching Europe via traders in the 16th century. Today, tea remains special to Chinese and British identity, as a major social tool and trading product on an international stage. Understanding tea culture between

China and Britain enhances mutual respect by highlighting their distinct characteristics and values, which is vital for fostering cultural exchange and friendship. It also offers insights for preserving and innovating tea traditions by learning from each other's practices. Additionally, recognizing these cultural differences aids in effective intercultural communication, helping to prevent misunderstandings and promote smoother interactions between the two cultures with tea as a tool.

2 Literature Review

This study aims to analyze the difference between Chinese and British tea culture from the Perspective of Hofstede's Cultural Dimension Theory. In this segment, researches on these two aspects are examined respectively through the presentation of their origins and expert comments. To make the literature review more objective and comprehensive, domestic literature about the thesis topic should be focused on as much as overseas literature.

2.1 Previous Studies on "Cultural Dimensions"

Geert Hofstede, a Dutch social psychologist, is widely recognized as a pioneer in cross-cultural research, leaving a significant academic legacy. His most notable contribution is the development of cultural dimensions that compare values across different countries. Hofstede's work in cultural and cross-cultural psychology is especially relevant in today's globalized world. The foundation of his theory emerged from an extensive survey conducted in the 1960s and 1970s, analyzing value variations among diverse divisions of IBM, involved over 100,000 employees from 50 countries across three geographic regions (Hofstede, 2001).

Hofstede initially delineated four salient cultural value dimensions: individualism and collectivism, power distance, uncertainty avoidance, and masculinity and femininity. Subsequent scholarly inquiry by Chinese sociologists revealed an additional dimension, encompassing fifty facets, concerning long-term versus short-term orientation (Bond, 1991). Finally, a replication study, spanning 93 discrete nations, corroborated the presence of the original five dimensions while identifying a novel sixth dimension denoted as indulgence and restraint.

2.2 Chinese and British Tea Culture

In ancient China, tea held significant cultural, social, and medicinal importance, manifesting in various aspects of daily life. Its utili-

zation encompassed ceremonial, social, medicinal, and philosophical dimensions, reflecting a deep-seated appreciation for its multifaceted attributes. Individuals of lower status were required to offer tea as a sign of respect to those of higher status. For example, (Li Jiamei, 2022) younger generations were expected to offer tea to their elders, students would offer tea to their teachers when apprenticing, and individuals would offer tea to their parents before marriage. While in Britain, tea, as a representative symbol, is something that people of all ages and genders can enjoy in China. However, when it was first introduced to England, it was popular primarily among the royal palace and the nobility before gradually spreading to lower classes with the development of trade (Jin Jingbo, 2018).

In the limited available literature, there is a plethora of studies examining the comparative aspects of Chinese and British tea culture, focusing primarily on tea types and the drinking etiquettes associated with tea consumption. However, there is a notable dearth of literature contextualizing Chinese and British tea culture within the framework provided by Hofstede's Cultural Dimensions Theory. If so, the studies limited on the perspective of individualism vs collectivism on discussion the different value between Britain and China. For instance, Zeng hao (2018) suggests China and the UK embody distinct values—collectivism and individualism—rooted in their unique historical contexts, leading to notable linguistic differences. Jiang feng (2017) and Peng chen (2021) indicate Chinese tea embodies a collective consciousness, whereas the British, particularly under the development of capitalism, emphasize individualistic spirit.

The study of Chinese and British Tea Culture can serve as a media which bridge the gap between the two different cultures. This study can facilitate conflict reduction, thereby fostering the dissemination and evolution of Chinese culture in other countries, and advancing intercultural exchange and integration.

3 Methodology of the Study

In regard of taking deep insights of the differences between Chinese and British as the aspect of tea culture for successful intercultural social communication. This paper mainly answers the following research questions:

- 1) Utilize Hofstede's Cultural Dimensions Theory as a framework to explore the cultural factors behind the differences in tea culture between China and Britain.
- 2) Provide beneficial guidance for cultural exchange, promoting cultural dissemination and communication between China and Britain with tea as a social tool.

This study employs a methodological approach that combines descriptive research and comparative analysis. The mixture of qualitative and quantitative research is applied. Specifically, the study will proceed through the following steps:

Interview: An interview will be designed to people who have lived Britain and know about both Chinese and British tea culture, aiming to discern variations in their cognition, attitudes, and behaviors towards tea culture between the two countries.

Data Analysis: Statistical analysis will be conducted on the results obtained from the questionnaire survey and in-depth interviews. Hofstede's Cultural Dimensions Theory will be employed to explore the cultural factors underlying the differences in tea culture between China and Britain.

Discussion and Suggestions: Based on the research findings, conclusions will be drawn, and corresponding recommendations will be proposed to provide beneficial guidance for cross-cultural communication.

4 Research Design

This study uses a literature review to compare Chinese and British tea culture, differing from prior methodologies, and conducts interviews to explore their historical, typological, and consumption distinctions. Ten college teachers who had the experience of living in Britain were interviewed. Interview questions, based on Hofstede's six cultural dimensions, are adapted for each country to enable a nuanced cross-cultural comparison. The correspondence between specific questions and cultural dimensions is shown in the table below:

Table 1. Cultural Dimensions Associated questions in tea-drinking practice

Dimensions	Definition	Associated Questions
Power Distance	It signifies the degree to which a society acknowledges and tolerates the unequal distribution of power within institutions and organizations.	Do you perceive any noticeable manifestation of power distance when drinking tea with high-ranking individuals (elders, superiors, etc.) from China/Britain, such as waiting for them to sit first or allowing them to drink tea first? Do you consider the seating arrangement important when drinking tea with high-ranking individuals from China/Britain?
Individualism vs. Collectivism	It refers to the degree to which individuals prioritize personal interests and autonomy over group harmony and collective goals, or vice versa.	Do you perceive any evident display of individualism or collectivism when drinking tea with Chinese/ British people? What other manifestations of individualism and collectivism do you see?
Masculinity vs. Femininity	It relates to the distribution of roles and values within a society along gender lines.	When you hear about a social tea gathering among Chinese/ British people, do you tend to picture them a gathering of males or females?
Uncertainty Avoidance	It pertains to the extent to which members of a society feel uncomfortable with ambiguity and uncertainty in various situations.	Are Chinese/ British people willing to try new tea brands or flavors that they have not tasted before? Are Chinese/ British people willing to try new tea-drinking ways they are unfamiliar with?
Long-term Orientation vs. Short-term Orientation	It reflects the extent to which individuals within a culture focus on the future and value perseverance in the present.	Do Chinese/ British people prioritize immediate enjoyment or long-term health when drinking tea? Are Chinese/ British people willing to invest in expensive tea leaves and tea ware?
Indulgence vs. Restraint	It assesses a society's disposition regarding the fulfillment of fundamental human desires associated with the enjoyment of life and leisure pursuits.	If Chinese/ British people get tea leaves or tea ware they like, are they willing to prepay to indulge themselves? Are Chinese/ British people willing to adhere to traditional tea etiquette when drinking tea?

5 Data Analysis

The data reflects teachers' perspectives on differences in Chinese and British tea culture regarding power distance, individualism vs. collectivism, and masculinity vs. femininity. All participants noted a clear power distance when drinking tea with high-ranking individuals in both cultures, such as waiting for them to sit or drink first, and acknowledged the importance of seating arrangements. Participants agreed that British tea drinking demonstrates individualism, while in China, tea is primarily a social tool used by men; in Britain, women are more commonly seen at tea parties.

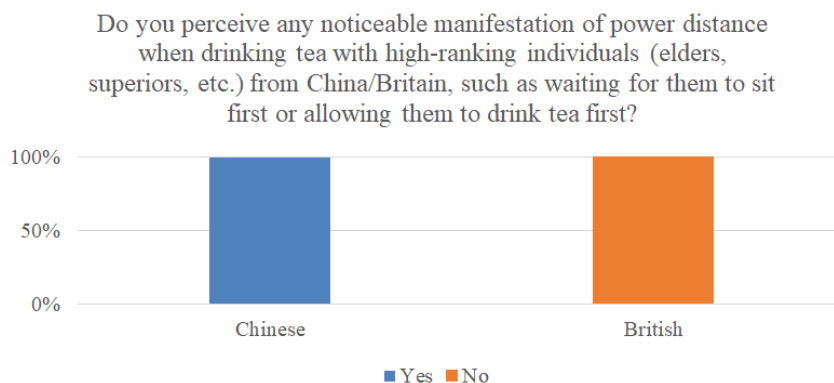


Figure1 power distance in social interactions in the context of drinking tea

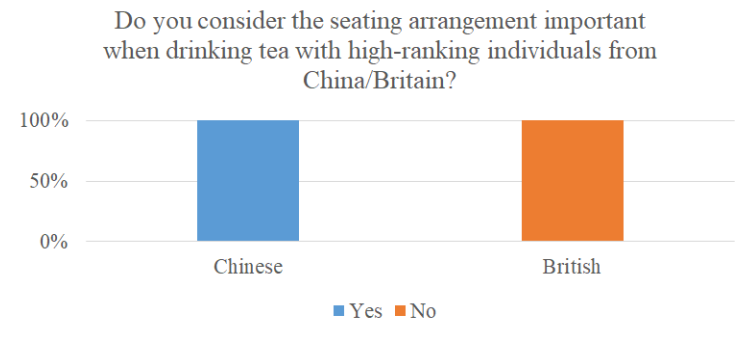


Figure2 seating arrangements in tea-drinking interactions

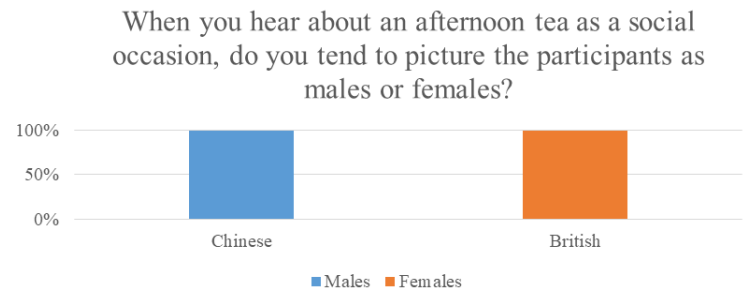


Figure3 gender associations with tea-drinking in social occasion

The data in Table 2 highlights participants’ views on cultural dimensions related to tea consumption. All interviewees agree that Chinese people are open to trying new tea brands and flavors, while 60% believe the British are similarly receptive. Furthermore, 80% think Chinese individuals are more likely to explore new tea-drinking methods, compared to just 50% for the British. In terms of long-term vs. short-term orientation, 80% view Chinese tea traditions as emphasizing long-term health benefits, whereas the British tend to prioritize immediate enjoyment. Regarding investment in quality, 30% of participants believe Chinese consumers invest in premium tea leaves and wares, while 40% think the British are more likely to do so. Concerning indulgence, 40% feel Chinese consumers are willing to prepay for preferred tea products, compared to 30% for the British. Finally, all participants agree that Chinese people adhere to traditional tea etiquette, while 40% believe the British often overlook it.

Table 2 participants’ vote of different tea-drinking habits between China and Britain

Question (multiple Choice Questions)	Votes	
	China	Britain
Are Chinese/ British people willing to try new tea brands or flavors that they have not tasted before?	10	6
Are Chinese/ British people willing to try new tea-drinking ways they are unfamiliar with?	8	5
Do Chinese/ British people prioritize immediate enjoyment when drinking tea?	2	8
Do Chinese/ British people prioritize long-term health when drinking tea?	8	2
Are Chinese/ British people willing to invest in expensive tea leaves and tea ware?	3	4
If Chinese/British people get tea leaves or tea ware they like, are they willing to prepay to indulge themselves?	4	3
Are Chinese/British people willing to adhere to traditional tea etiquette when drinking tea?	10	4

Chinese individuals are perceived as more open to experimenting with new tea flavors and methods, with a greater focus on long-term health benefits and adherence to traditional etiquette. In contrast, British individuals appear to prioritize immediate enjoyment and are considered more likely to invest in premium tea. Overall, these differences highlight varying cultural values related to tea, shaped by long-term versus short-term orientations and attitudes toward indulgence.

6 Research Findings: Compare Chinese and British tea culture from the perspective of Hofstede's Culture dimension

6.1 Similarity: Masculinity and Uncertainty Avoidance

According to Hofstede's Cultural Dimension Index (figure 4), both China and Britain are characterized by a masculine orientation and low uncertainty avoidance indicating motivation to achieve success and comfort with ambiguity. This explains the survey data (Table 2), highlighting the notable gender label that in both China and Britain, men drink tea for social purposes dominating tea consumption, often to pursue business cooperation, while women enjoy afternoon tea as a way to lead an elegant lifestyle. The data of this survey (Table 2) also suggests that Chinese and British people are more open to trying new tea brands, flavors, and methods, with majority agreeing that they are more adventurous in their tea experiences.

6.2 Distinction: Power Distance, Individualism, Long Term Orientation and Indulgence

Hofstede's Cultural Dimension Index (figure 4) also shows that China scores high on Power Distance, indicating a preference for hierarchical structures, whereas Britain has a low score, favoring egalitarianism. As in tea drinking etiquette, data of this study suggests all participants observed that power distance is manifest in Chinese cultures, with clear distinctions shown through seating arrangements and the order of drinking tea when in the company of high-ranking individuals, such as elders or superiors.

Hofstede believed that China is more collectivist, prioritizing group harmony over individual goals, while Britain is highly individualistic, emphasizing personal freedom. When it comes to tea culture, all interviewees believe that British people exhibit individualism when drinking tea, with a small percentage (10%) speculating that younger Chinese may adopt individualistic behaviors due to Western influence.

China demonstrates a long-term orientation and restraint, focusing on future rewards, while Britain has a short-term orientation, favoring immediate results. China tends toward restraint in social norms, whereas Britain is more indulgent, encouraging personal enjoyment. Interviewee in this study view Chinese tea culture as focused on long-term health benefits, while the British focus on immediate enjoyment.

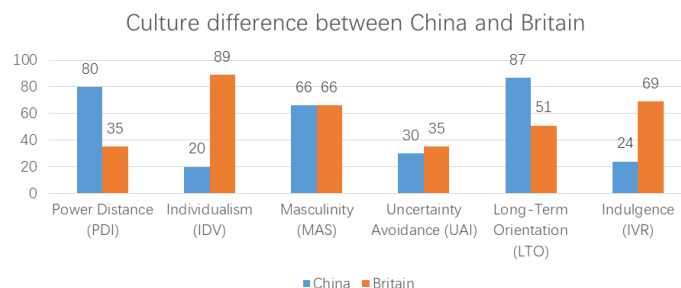


Figure4 Culture Dimension index between China and Britain

7 Conclusion

Regarding power distance, Chinese and British tea cultures reflect distinct values and social structures. In China, tea is integral to social order, with inferiors presenting tea to superiors as a sign of respect. In terms of individualism vs. collectivism, China's tradition is collective, with tea enjoyed in familial or community settings, while British culture emphasizes individualism, influenced by the Enlightenment. Regarding masculinity vs. femininity, Chinese tea culture sees men using tea for social purposes, while in Britain, women are more involved in tea parties. For uncertainty avoidance, Chinese tea-drinking is a flexible daily habit, while British tea culture is more adaptable to new information and changing plans. In terms of long-term vs. short-term orientation, Chinese tea drinking is rooted in long-term health benefits, while British tea culture focuses on immediate enjoyment. As to indulgence vs. restraint, Chinese people adhere to traditional tea etiquette, while British society is more indulgent, seeking enjoyment and pleasure.

8 Future Study

Although valuable findings are obtained, this study has limitations embedded within it. There are limitations in the scope of the interview survey. In the future study, it is necessary to expand the scope of empirical research on the relevant situation of both Chinese and British people, and conduct investigation in all age levels and genders. Meanwhile, reasons hidden behind these deviations can be broadened discussed and for further analysis.

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Talent Cultivation Path for Interdisciplinary Professionals in Universities Based on an “AI+” Thinking

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Abstract: With the continuous advancement of network information technology, particularly the development of generative artificial intelligence, the talent cultivation models in higher education institutions are facing significant challenges. How to improve the cultivation methods for interdisciplinary talents in universities under the guidance of “AI+” thinking warrants consideration. Improvements are needed in the following aspects: adhering to the principles of disciplinary integration and AI + disciplines, introducing AI-powered smart education platforms, updating teaching models, integrating “AI + industry-education integration” to promote educational path reform, adopting a multi-perspective and dialectical view of professional teaching, and ensuring the effectiveness of talent cultivation. These measures aim to enhance the quality of cultivating interdisciplinary talents in universities in the new era.

Keywords: “AI+” Thinking; Interdisciplinary Talent Cultivation; Cultivation Path

With the intensification of global economic integration, countries worldwide are actively cultivating high-end artificial intelligence talent to seize strategic initiative and competitive advantages in the new round of technological revolution and industrial transformation. According to statistics, 45 countries and 451 universities worldwide offer artificial intelligence programs, especially in the United States, the United Kingdom, Germany, and Japan, where over 50% of universities provide AI courses. Against this backdrop, universities in China should adapt to the demands of the artificial intelligence (AI) era and establish an interdisciplinary talent cultivation path based on “AI + disciplines.” This will lay a solid foundation for cultivating interdisciplinary talents proficient in AI technology, which is of significant importance for promoting the sustainable development of universities.

1 Current Status of Interdisciplinary Talent Cultivation Based on “AI+” Thinking

1.1 International Status

With the rapid development of AI technology, major global companies are expanding into related fields, leading to a sharp increase in demand for top AI talent. However, in this talent competition, not only are the five major US tech companies facing intense rivalry, but other large global tech firms are also actively recruiting AI elites. Currently, the five major US tech companies—Amazon, Apple, Google, Meta, and Microsoft—have seized opportunities for rapid development through AI advancement, but they face international competition in talent acquisition. Other large global tech companies employ five times more top AI talent than these five US giants. These talents have more choices regarding how to bring their skills and expertise to market. They exhibit extremely high cross-border mobility, frequently change positions, and strategically plan their careers to gain greater recognition and influence. Salary is no longer the sole factor influencing the career choices of AI talent; they place greater emphasis on self-realization and promoting the marketization of new AI applications. With the rapid development of technology worldwide, AI is gradually becoming the core driver of economic and social development.

1.2 Domestic Status

China’s AI industry has achieved remarkable development in recent years. According to the “2024 China Artificial Intelligence Talent Development Report,” the scale of China’s AI industry reached hundreds of billions of RMB in 2024, becoming a significant component of the global AI industry. In the enterprise services market, the application of AI technology has penetrated various fields such as government affairs, security, manufacturing, finance, healthcare, logistics, and warehousing, greatly facilitating the digital transformation of these industries. In the consumer sector, products like smart speakers, home robots, and wearable devices have also entered a phase of rapid development and gained popularity among consumers^[1]. In China, the government highly prioritizes AI development, listing it as a national strategy

and providing strong support in policies, funding, and talent. As a knowledge-intensive industry, AI imposes high demands on professionals' business capabilities, work experience, educational background, and professional ethics. The industry urgently needs talents with comprehensive abilities, professional knowledge, skills, and engineering practice capabilities.

2 Challenges and Problems in Cultivating Interdisciplinary Talents under the “AI+” Thinking

2.1 Insufficient Depth of University-Industry Cooperation in the “AI + Industry-Education Integration” Model

The “AI + industry-education integration” model is crucial for cultivating interdisciplinary talents and is key to educational reform. However, in practice, university-industry cooperation often remains superficial and lacks depth. Although enterprises can provide technical and practical platform support to universities, the connection with university teaching is insufficient. The university talent cultivation model still focuses primarily on theory and fails to fully explore the actual needs of enterprises. Consequently, the alignment between university interdisciplinary talent cultivation programs and enterprise requirements is not high. Thus, the depth of industry-education integration is severely lacking. While university-industry cooperation has been initiated, the goal of “mutual benefit” has not yet been fully achieved ^[2].

2.2 Difficulties in Implementing Interdisciplinary AI Curriculum and Double Degree Programs

In the practice of cultivating interdisciplinary talents under the “AI+” thinking, problems exist in setting up interdisciplinary AI courses and implementing double degree programs. In practice, establishing interdisciplinary courses may face challenges such as insufficient faculty resources and an imperfect curriculum system. Students exhibit differences in interest and ability regarding AI and related technologies, with significant polarization: some students show extreme enthusiasm and proactive learning, while others lack interest and struggle to complete routine tasks. Currently, universities often adopt a uniform cultivation model for interdisciplinary talents without stratifying based on students' actual situations, leading to generally mediocre outcomes.

2.3 Inadequate Effectiveness of “AI + Dual-Qualified” Teacher Training Bases

For universities and enterprises, establishing teacher training bases through university-industry cooperation can positively contribute to enhancing teachers' professional levels. However, during implementation, influenced by various factors, the training plans often deviate from actual needs. The training system for teachers' AI technology skills lacks systematicness and may not closely integrate with enterprises' cutting-edge technologies, directly impacting the training effectiveness. Meanwhile, amidst rapid technological iteration, the application of modern teaching resources might be limited by technical conditions, teacher acceptance, and other factors, preventing their full potential from being realized ^[3].

3 Core Principles for Constructing the Interdisciplinary Talent Cultivation Path Based on “AI+” Thinking

3.1 Promoting “Integration of All Disciplines”

The rapid development of AI technology provides new opportunities and imposes new requirements for higher education. Universities should join hands, use digital technology as a means to promote interdisciplinary research and construction among “all disciplines,” thereby achieving “integration between specialized disciplines.” Taking this cooperation as an opportunity, they should complement each other's advantages, strive in the same direction, establish new paradigms for constructing New Liberal Arts and New Engineering disciplines, explore new models for cultivating top-notch interdisciplinary innovative talents, and contribute to building a strong education system. Efforts should be made collectively at strategic support, social service, and talent cultivation levels to set an example for inter-university cooperation in the new era ^[4].

3.2 Emphasizing the Combination of “AI + Disciplines”

To ensure the quality of cultivating interdisciplinary talents in universities, the system construction must also actively explore the new direction of “AI + disciplines” talent cultivation on the basis of consolidating the cultivation of interdisciplinary talents in various uni-

versities. The goal is to cultivate talents who possess thinking skills, exploratory and practical abilities, understand relevant natural science knowledge, and can analyze and apply AI technology. Du Qian also suggested that this form “helps students quickly mobilize cross-disciplinary knowledge reserves when facing complex problems, propose innovative solutions, and truly achieve the cultivation and enhancement of cross-border integration capabilities”^[5]. Specifically, the following two points need emphasis.

(1) Defining Talent Cultivation Objectives and Optimizing Curriculum System Construction: Defining talent cultivation objectives is central to talent cultivation in various disciplinary educations within universities. Traditional disciplinary education focuses on cultivating high-quality talents who master systematic professional knowledge, possess logical thinking and argumentation skills, good written and verbal expression abilities, and independent analysis and problem-solving skills. However, facing technological development, especially AI advancement, the talent cultivation objectives of traditional professional education should also adapt timely. Universities should adjust talent cultivation objectives based on the current status of their professional development, promote the integration of disciplinary teaching, talent cultivation, and technology, leverage advantageous disciplines such as chemical engineering, safety engineering, and information engineering, use the construction of interdisciplinary disciplines as a starting point, achieve comprehensive construction integrating traditional professional disciplinary teaching with AI interdisciplinary studies, conduct multidisciplinary optimization and combination, refine research directions, and create a characteristic professional curriculum system for universities under the context of the new era and new liberal arts. Meanwhile, Hong Yi proposed that “Only by continuously absorbing the latest thinking, improving knowledge structures, and adjusting teaching methods can we better meet the higher demands for interdisciplinary talents in the intelligent media era.”

(2) Multi-pronged Approach to Construct an Interdisciplinary Talent Cultivation Model: In recent years, responding to the societal demand for interdisciplinary international talents, various universities have adopted a multi-pronged approach in curriculum construction and think tank building to construct new models for interdisciplinary talent cultivation. Furthermore, they have emphasized the importance of introducing AI technology. ① In terms of curriculum construction, universities can collaborate with enterprises to co-build “AI + professional knowledge” courses, establish new mechanisms for deep industry and enterprise participation in university professional construction and talent cultivation, and deepen all-round industry-university-research collaboration on this basis, enabling students to better understand knowledge and skills within this course model. ② In terms of think tank construction, relevant government departments in various provinces and cities can cooperate with local universities to jointly build local professional discipline research bases. The construction of such bases needs to focus on AI technology, supported by disciplines such as chemical engineering, materials, environment, safety, medicine, marketing, and software engineering, ensuring the effectiveness of building diverse and interdisciplinary local learning think tanks.

4 Main Pathways for the Interdisciplinary Talent Cultivation System Based on “AI+” Thinking

4.1 Integrating “AI + Industry-Education Integration” to Promote Educational System Reform

Industry-education integration refers to the model where universities, according to their established majors, actively engage in the development of specific industries, closely integrate teaching and production, allow education and industry to mutually influence and enhance each other, and thereby achieve talent cultivation goals. The “AI + industry-education integration” model requires enterprises and institutions to jointly build a cooperative bridge for resource sharing and complementary advantages. Specifically, within this model, enterprises need to feedback advanced technology and practical experience into education, while institutions precisely supply suitable talent to enterprises, jointly promoting the innovative development of the AI industry and the enhancement of educational levels, achieving mutual benefit and win-win results, and facilitating socio-economic transformation and upgrading.

For example, in optimizing the university interdisciplinary talent cultivation system, integrating the “AI + industry-education integration” model requires constructing AI modern industry colleges to promote educational system reform. The construction of these industry colleges needs to rely on various foundational schools and advantageous schools within the university. Furthermore, in promoting the construction of AI modern industry colleges, it is necessary to closely focus on the goals of modern industry college construction, concentrate on the comprehensive AI-enabled intelligent revolution across various industry sectors, strengthen university-industry cooperation and industry-ed-

education integration, deepen collaborative education mechanisms, leverage advantageous disciplines and characteristic professional clusters with specialized technologies and knowledge, break disciplinary and professional barriers, use “AI + disciplinary technology,” big data, cloud platforms, etc., as entry points, and carry out reform practices in management mechanisms, guarantee systems, talent cultivation models, and industry-university-research services. This ensures the preliminary construction effectiveness of the talent cultivation model within AI modern industry colleges, which is crucial for promoting the cultivation of interdisciplinary talents in universities in the new era.

4.2 Adopting a Multi-perspective and Dialectical View of Professional Teaching to Strengthen Professional Construction

Against the backdrop of the sweeping global digital wave, the vigorous development of AI technology is bringing transformative changes to various industries, and higher education is no exception. In the teaching of various majors within universities, adopting a multi-perspective and dialectical view of professional teaching and strengthening professional construction based on AI technology is key to ensuring the quality of cultivating interdisciplinary talents.

For example, universities can offer minors and micro-programs, providing corresponding AI courses and learning modules for students from other majors, supporting interested students in learning AI knowledge and skills across disciplines. Supporting relevant universities to establish double degree interdisciplinary talent cultivation programs and joint bachelor’s degree programs combining “AI Technology + Other Majors,” carrying out various types of AI talent joint cultivation, enriching AI talent cultivation forms, innovating cultivation 内涵 (connotation), and enhancing comprehensive education quality. Focus on “Artificial Intelligence + X” interdisciplinary talents, core professional basic knowledge, practical innovation ability, and scientific research literacy, strive to improve teaching quality, and construct an integrated talent cultivation model encompassing industry-innovation-talent-teaching. Only in this way can the effectiveness of cultivating interdisciplinary talents be truly guaranteed.

4.3 Jointly build an “AI+ Dual-qualified” teacher training base with enterprises to enhance the professional level of teachers

4.3.1 Formulating Scientific Training Plans

The construction of “AI + Dual-Qualified” teacher training bases requires contributions and efforts from both enterprises and schools. To optimize the university interdisciplinary talent cultivation model, universities need to actively explore the creation of intelligent teaching platforms, establish cooperation with renowned domestic and foreign enterprises, and integrate technologies such as interactive AI teaching assistants, human-AI co-creation, intelligent evaluation, virtual mixed reality, and text-to-video within AI scenarios. This enriches teacher training plans and helps enhance the quality of university interdisciplinary talent cultivation.

For example, in constructing such training bases, to ensure the effectiveness of building the “AI + Dual-Qualified” team, daily training plans must incorporate AI technology, modern process technology, big data technology, and innovative development thinking. This provides richer resources and more precise directions for talent cultivation across different majors in universities. Furthermore, university faculty across various disciplines can update their thinking modes and improve their teaching capabilities through this approach, thereby contributing their teaching strength to the school’s development. Therefore, university-enterprise cooperation in building “AI + Dual-Qualified” teacher training bases requires Chinese and foreign enterprises and universities to jointly formulate a complete set of cultivation plans.

4.3.2 Fully Utilizing Modern Teaching Resources

In the Internet era, technological means such as big data, intelligence, cloud computing, and AI have become important technologies leading social development. Based on AI technology, promoting the university-enterprise co-construction of “Dual-Qualified” teacher training bases is essential. In the process of talent cultivation and teacher training within these bases, various modern teaching resources should be fully applied. By applying AI technology, richer teaching resources can be introduced into the training base. This allows university teachers and student groups from various majors to access various cutting-edge technologies in social forefront fields within the practical base, enabling their thinking modes to be updated and changed, which is highly beneficial for ensuring the quality of training activities.

4.4 Transforming Talent Cultivation Thinking to Foster Supercomputing-AI Interdisciplinary Talents

In the current wave of rapid technological development, high-performance computing (HPC) and AI have become the two core driving forces for social progress and technological innovation. Supercomputers, with their powerful computing and data processing capabilities, provide support for fields such as scientific research, engineering design, and climate simulation. AI, through intelligent algorithms and learning capabilities, has brought revolutionary breakthroughs to tasks such as data analysis, pattern recognition, and decision optimization. With the deep integration of the two, China is stepping into a brand-new era of intelligent computing. Under the influence of this broader context, the thinking on talent cultivation in major universities also needs to be transformed accordingly, in order to foster compound talents in supercomputing and AI, and to facilitate the development of various fields towards intelligence and internationalization.

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