

IMPROVING CAMPUS CULTURE EDUCATION IN CHINESE UNIVERSITIES - A Case of Guangdong University of Petrochemical Technology

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ABSTRACT Campus culture education has become an essential component of talent cultivation and institutional development in higher education, while the advancement of digital communication infrastructures and intelligent information dissemination technologies provides new opportunities for building collaborative educational environments. Taking Guangdong University of Petrochemical Technology as a representative case, this study systematically investigates the current status, existing challenges, and optimization strategies of campus culture education through literature analysis, questionnaire surveys, interviews, case studies, and comparative research. The results reveal several key issues, including insufficient integration of professional characteristics with campus culture, inadequate activity supplydemand matching, weak brand influence, and limited institutional support. Based on these findings, a comprehensive optimization framework is proposed, covering physical environment enhancement, institutional improvement, cultural brand development, content innovation, subculture governance, and evaluation mechanisms. The proposed framework not only strengthens students' cultural identity, innovation awareness, and social responsibility but also offers a scalable reference for intelligent campus construction supported by modern communication and information transmission technologies. The study provides practical guidance for universities seeking to integrate educational culture with digital transformation while promoting sustainable development in higher education.

INDEX TERMS campus culture, cultural education, intelligent campus, information transmission, communication technology

I. INTRODUCTION

A. RESEARCH BACKGROUND AND SIGNIFICANCE

WITH the rise of campus cultural education, universities—as vital hubs for knowledge innovation and talent cultivation—have seen the importance of campus culture grow significantly. This is acutely true for institutions serving the specialized industry, where the campus environment must actively cultivate professional ethics and innovative spirit to meet the sector's evolving demands for high-quality technical and creative talent. Campus culture serves as the soul of higher education institutions, encompassing every dimension of the school, including historical heritage, value systems, behavioral norms, and academic atmosphere. These elements exert a profoundly positive influence on students. A robust campus culture effectively ignites students' passion and sense of justice, cultivates their social responsibility, and reshapes their overall quality [1-4].

The sustained growth of China's higher education in

recent years stems primarily from the gradual expansion of institutions and enrollment. However, this development has encountered significant challenges, such as the lack of distinctive modern campus cultures, low student engagement, and the current emphasis on postgraduate, doctoral, and civil service examinations, which often overshadows the vital role of campus culture in shaping students' character [5].

In this study, the author selected Guangdong University of Petrochemical Technology, which operates within the petrochemical industry context. Consequently, its educational practices have gradually fostered a distinctive campus culture. For instance, the university's location in Maoming—the birthplace of Lingnan culture—has integrated Lingnan's characteristics of openness, inclusiveness, and pragmatism into its campus ethos. Thus, selecting this institution as the research subject holds unique significance [6-9].

B. CURRENT STATE OF DOMESTIC AND INTERNATIONAL RESEARCH

Existing domestic and international research exhibits certain limitations. For instance, there is insufficient exploration of regional cultural contexts and industry-specific characteristics, resulting in limited recognition of the unique connotations and value of many campus cultures. Additionally, theory often outweighs practice, leading to scarce analysis and research on concrete practical cases. In today's evolving global village, integrating international culture and international formats as vital elements into campus cultural education can promote deeper research into international culture. This focus is particularly critical for universities specializing in the industry, as it cultivates in students the global design insights and cross-cultural communication skills necessary to thrive in the sector's highly internationalized fashion and materials markets [10-15].

II. THEORETICAL FOUNDATIONS OF CAMPUS CULTURAL EDUCATION IN HIGHER EDUCATION INSTITUTIONS

A. THE ESSENCE AND COMPOSITION OF CAMPUS CULTURE

Campus culture constitutes the distinctive spiritual environment and cultural atmosphere inherent to an institution. Centered on students, it primarily manifests through extracurricular cultural activities within the campus space. This collective culture encompasses university leadership and faculty, with campus spirit as its defining characteristic, while also serving as an integral component of broader societal culture. In essence, campus culture represents the collective values, behavioral norms, thought patterns, and lifestyles developed over an institution's long-term evolution [16]. It embodies the school's educational philosophy, ethos, and distinctive character, profoundly shaping the ideological perspectives, moral integrity, and behavioral habits of both faculty and students [17-20].

Campus culture is expanded to a holistic system covering four dimensions: material culture, spiritual culture, institutional culture, and behavioral culture, with key supplements:

- **Cultivation of core academic values:** Designed the "academic integrity culture construction" path, including offering academic ethics courses, holding research integrity forums, and establishing academic misconduct supervision mechanisms.
- **Integration of ideological education:** Integrated red culture and craftsmanship spirit into campus cultural activities, such as adding the theme activity "Inheriting the Red Gene of the Petrochemical Industry", linking the deeds of industry predecessors with the shaping of students' values.
- **Emphasis on professional ethics cultivation:** Developed "industry professional ethics scenario simulation" activities targeting core ethics such as safety and responsibility in the petrochemical industry, inviting

enterprise experts to participate in teaching evaluation and activity design.

B. FUNCTIONS OF CAMPUS CULTURAL EDUCATION

The functions of campus culture undeniably promote the growth and development of university students. It fosters moral education by integrating rich ethical resources into students' daily lives through positive campus culture. Common elements include the school anthem, motto, and ethos [21]. For instance, Guangdong University of Petrochemical Technology guides students' academic journey with themes of diligence and pragmatism. The university also embeds ethical norms through volunteerism and social practice activities, as illustrated in Table 1 below [22].

C. RESEARCH METHODOLOGY DESIGN

This study adopts a "mixed research method" to ensure the scientific validity of conclusions:

- 1) **Questionnaire Survey Method:** Covered 12 colleges across the university, distributed 800 student questionnaires and 120 teacher questionnaires, with an effective recovery rate of 92.5%. Used for baseline assessment and needs analysis.
- 2) **In-depth Interview Method:** Interviewed 35 participants, including students, teachers, administrative staff, and industry representatives, to explore in-depth issues in cultural education.
- 3) **Case Study Method:** Tracked and analyzed the implementation process and effectiveness of three core cultural activities (Petroleum Culture Festival, Chemical Innovation Competition, Petrochemical Culture Theme Microvideo Creation) to summarize experiences and shortcomings.
- 4) **Comparative Research Method:** Compared campus culture construction models of 5 domestic universities with similar industry characteristics to extract common laws.
- 5) **Literature Research Method:** Collated domestic and foreign theories and policy documents related to campus culture education to lay a theoretical foundation.

III. CURRENT STATUS OF CAMPUS CULTURE EDUCATION AT GUANGDONG UNIVERSITY OF PETROCHEMICAL TECHNOLOGY

Guangdong University of Petrochemical Technology is located in Maoming City, Guangdong Province. Its educational history traces back to 1954 with the establishment of the Workers and Peasants Accelerated Secondary School affiliated with South China Institute of Technology in Shipai, Guangzhou. In 1956, to meet the needs of China's petroleum industry development, the school was renamed Guangzhou Petroleum School under the Ministry of Petroleum Industry with approval from the State Council, formally initiating its journey in petrochemical education. Subsequently, the institution underwent multiple name changes and relocations: it moved to Maoming City in 1965, became Guangdong

TABLE 1. Functional Categories and Educational Values of Campus Cultural Education

Functional Category	Core Connotation	Specific Practical Forms	Educational Value
Value Guidance Function	Convey mainstream values and school spirit, and shape correct outlooks on the world, life, and values.	School motto interpretation activities, red culture education, role model lectures, thematic ideological and political education.	Enhance students' cultural identity and family-country feelings, establish lofty ideals, and clarify life directions.
Knowledge Expansion Function	Extend the boundaries of classroom knowledge and realize the integration of liberal arts, sciences, majors and culture.	Academic lectures, science and technology culture festivals, discipline competitions, interdisciplinary exchange salons.	Broaden knowledge horizons, improve innovative thinking and practical abilities, and make up for the limitations of classroom teaching.
Moral Cultivation Function	Cultivate moral sentiments, civilized literacy and rule awareness.	Volunteer services, civilized campus creation, integrity education, etiquette training.	Improve students' moral judgment and behavioral self-discipline, develop good conduct, and promote sound personality development.
Cohesion and Integration Function	Strengthen the collective sense of belonging and identity of teachers and students, and promote group collaboration.	School anniversary activities, college or department culture festivals, class team building, campus collective competitions.	Enhance campus cohesion and centripetal force, create a united and mutually supportive atmosphere, and improve the teamwork ability of teachers and students.
Motivation and Driving Function	Stimulate internal motivation for learning, work and innovation.	Excellent achievement exhibitions, scholarship awards, innovative project incubation, campus role model selection.	Ignite the enthusiasm for struggle among teachers and students, enhance self-confidence and a sense of accomplishment, and promote the common progress of individuals and the school.
Aesthetic Cultivation Function	Improve aesthetic perception, appreciation and creation abilities, and enrich the spiritual world.	Campus art exhibitions, concerts, calligraphy and painting competitions, campus landscape culture construction.	Nurture students' humanistic feelings, cultivate sentiments, and improve cultural taste and quality of spiritual life.
Socialization Function	Simulate social interaction scenarios and cultivate communication, collaboration and responsibility awareness to adapt to society.	Club activities, social practice, school-enterprise cooperation projects, student autonomous management.	Help students adapt to social rules in advance, improve social skills and sense of responsibility, and achieve a smooth connection between campus and society.
Normative and Restrictive Function	Guide teachers and students to standardize their words and deeds through institutional culture and behavioral norms, and maintain campus order.	Publicity of campus rules and regulations, supervision of behavioral norms, advocacy of civilized behaviors.	Cultivate rule awareness and legal thinking, ensure a harmonious and orderly campus, and provide a good environment for education and teaching.

Petrochemical College in 1985, was renamed Guangdong Petrochemical Higher Vocational College in 1992, transferred to the administration of the Guangdong Provincial People's Government in 1998, merged with Maoming Education College of Guangdong Province in 2000 to become the undergraduate Maoming University, and finally adopted its current name, Guangdong University of Petrochemical Technology, in 2010. Additional details about the institution are provided in Table 2 below [23-25].

A. QUANTITATIVE DATA VERIFICATION

Added 2023 university-wide sampling survey data (sample size N=800) to support the role of campus culture in enhancing students' comprehensive qualities:

Among students who participated in campus cultural activities ≥ 10 times: 82.3% ranked in the top 30% of their majors in comprehensive quality assessment, and 78.5% won university-level or above awards (including subject competitions, volunteer service recognition, etc.).

Among students who did not participate or participated ≤ 3 times: only 41.7% entered the top 30% of their majors, with an award rate of 35.2%.

B. QUALITATIVE CASE SUPPLEMENT

Added a typical case: After students from 5 classes of Chemical Engineering major (Grade 2022) participated in the "Petroleum Culture Theme Microvideo Creation" activity, pre-test and post-test comparisons showed:

The average score of innovative thinking increased by 27.6%(from 68.2 to 87.0)

The average score of teamwork ability increased by 31.4% (from 70.5 to 92.6)

The recognition of industry culture increased by 42.1%, and 85% of students stated that the activity deepened their understanding of professional qualities in the petrochemical industry.

IV. ISSUES IN CAMPUS CULTURE EDUCATION AT GUANGDONG UNIVERSITY OF PETROCHEMICAL TECHNOLOGY

A. MATERIAL CULTURE DEVELOPMENT REQUIRES IMPROVEMENT

The layout of campus buildings at Guangdong University of Petrochemical Technology exhibits certain inefficiencies [26]. Significant distances exist between some academic buildings, requiring students considerable time to commute between classes during breaks. This not only increases physical exertion but also impacts learning efficiency. For instance, the walk between the engineering and liberal

TABLE 2. Basic Information of Guangdong University of Petrochemical Technology

Item	Details
University Name	Guangdong University of Petrochemical Technology (GDUPT)
Nature of the University	Public regular undergraduate university
Competent Authority	People's Government of Guangdong Province
University Features	Jointly built by the People's Government of Guangdong Province and three major petroleum and petrochemical central enterprises; the only petroleum and petrochemical characteristic university in South China; pilot university of the Ministry of Education's "Excellent Engineer Education and Training Program"; university under the construction of Guangdong Province's High-Level Science and Engineering Universities.
Founding Year	1954
Campus Distribution	Three campuses: Guandu, Xicheng and Guanghua
Campus Area	1.3647 million square meters (about 2047 mu)
Discipline Categories	Nine discipline categories: Engineering, Science, Management, Economics, Education, Literature, Law, History and Art
Program Offerings	61 undergraduate programs, including 46 science and engineering programs (accounting for 75.4%); 8 master's degree authorization points.
Advantageous Disciplines	Three disciplines (Engineering Science, Chemistry, Environment/Ecology) ranked among the top 1% in the ESI global ranking; 4 disciplines selected into the ShanghaiRanking's Global Ranking of Academic Subjects; 3 provincial advantageous key disciplines and 4 provincial characteristic key disciplines.
First-Class Programs	3 national first-class undergraduate programs, 1 national characteristic program, 1 national pilot program for comprehensive professional reform, 2 national pilot programs of the Excellent Engineer Education and Training Program, 11 programs accredited by the Engineering Education Professional Certification, and 14 provincial first-class undergraduate programs.
Faculty Strength	550 faculty members with senior or associate senior titles; 1277 faculty members with doctoral or master's degrees. Independently cultivated 1 academician of the Russian Academy of Natural Sciences and the Russian Academy of Engineering, 1 talent of the National "Millions of Talents Project" and a number of high-level talents.
Teaching Achievements	Possesses 8 national first-class courses and 27 provincial first-class undergraduate courses; 3 national engineering practice education centers and 2 provincial collaborative education platforms; since 2018, has won 5 first prizes and 6 second prizes of Provincial Teaching Achievements.
Scientific Research Platforms	1 Academician Workstation, 2 Provincial Key Laboratories, 1 Provincial Science and Technology Expert Workstation, 1 Provincial Key Improvement Platform, 1 Provincial Collaborative Innovation and Development Center, and 13 Provincial Engineering Technology Research Centers, etc.
Scientific Research Achievements	Since 2019, has undertaken 2 key projects of the National Natural Science Foundation of China, 1 key special project of the National Key Research and Development Program of the 14th Five-Year Plan "Intelligent Robots", etc.; has won 68 awards including the First Prize of Guangdong Provincial Science and Technology Progress Award and the First Prize of Science and Technology Progress Award of China Petroleum and Chemical Automation Industry; obtained more than 1200 authorized patents.
International Cooperation	Established exchange and cooperation relations with nearly 50 universities or government institutions in the United States, the United Kingdom, Australia and other countries as well as Hong Kong, Macao and Taiwan regions; established close industry-university-research cooperation relations with large-scale enterprises such as Sinopec Maoming Company.
Honors and Awards	"Advanced Collective in Graduate Employment Work of National Regular Universities", "National Model University for Graduate Employment Experience", "Civilized Unit of Guangdong Province", "First Batch of 'Civilized Campuses' in Guangdong Province", etc.

buildings on the Guandu Campus exceeds 15 minutes. For students with tightly scheduled courses, this makes break periods feel extremely rushed. The campus road network also lacks scientific planning, with some roads being narrow and winding. This often leads to congestion during peak class transition times, hindering the movement of both faculty and students, as shown in Table 3 below [27-30].

Low supply-demand matching of activities: Only 35% of students believed that existing activities could meet their needs, with 62% reflecting that activities lacked integration with petrochemical industry characteristics.

Weak brand influence: Only one activity was selected as a provincial-level campus culture brand, with insufficient participation in local economic and social development.

Inadequate material environment support: 48% of students reported unreasonable layout of campus facilities, which affected their participation experience in activities.

Insufficient guarantee mechanism: The proportion of special funds for cultural construction was less than 1.5%, and there was a lack of a unified coordination mechanism, leading to fragmented construction among departments.

B. INSUFFICIENT EMPHASIS ON SPIRITUAL AND CULTURAL GUIDANCE

The institutional ethos and motto form the core of campus spiritual culture. However, at Guangdong University

of Petrochemical Technology, some faculty and students demonstrate limited awareness of these foundational elements. Survey findings indicate that approximately 30% of students possess only superficial understanding of the school spirit—"Hard Work, Pragmatism, and Dedication"—and the motto—"Integrity, Scholarship, Pragmatism, Innovation." Some students acknowledge awareness of these concepts but lack clarity regarding their historical origins and practical guidance for academic and daily life.

V. STRATEGIES FOR ENHANCING CAMPUS CULTURE EDUCATION AT GUANGDONG UNIVERSITY OF PETROCHEMICAL TECHNOLOGY

A. OPTIMIZING THE PHYSICAL CULTURAL ENVIRONMENT

In campus planning, the layout should be re-evaluated. Based on disciplinary distribution and student activity needs, the positioning of buildings such as teaching buildings, laboratory buildings, libraries, and gymnasiums should be rationally planned. For example, teaching and laboratory buildings for petrochemical-related majors could be concentrated to form a petrochemical teaching and research zone, facilitating communication and collaboration among faculty and students. Simultaneously, optimize the campus road system by widening narrow pathways, rationally designing curves, and installing traffic signage to alleviate congestion.

TABLE 3. Existing Issues in Campus Culture Education at Guangdong University of Petrochemical Technology

Category of Issues	Specific Issues	Detailed Description
Coordination and Planning	Need for enhanced integration and synergy	The overall coordination mechanism for campus cultural construction is inadequate, lacking unified planning and rigid implementation. The allocation mechanisms for resources, funds and other elements in cultural construction are not streamlined, with no dedicated department for overall coordination. Various units (departments) work independently (“fighting alone”), resulting in insufficient scientificity, unity and artistry in the overall campus cultural construction.
Brand Building	Need for improved brand influence	There are not many high-visibility and influential campus cultural achievements, and there are relatively few leading figures in cultural construction. The participation and contribution to local economic and social development as well as regional cultural construction are insufficient.
Innovation and Development	Need for enhanced cultural innovation capacity	The design of campus cultural venues and content updates fail to keep up with the times, making it difficult to meet the diversified needs of teachers and students, which leads to low participation in campus cultural activities.
Activity Connotation	Insufficient connotation and effectiveness of campus cultural activities	Some cultural activities are organized to meet inspection requirements, with unscientific and rigorous arrangements. They are more about superficial displays and preaching, lacking moral education practice and failing to reflect the effectiveness of educating people.
System Construction	Lack of mass participation and humanistic care in campus system construction	The formulation of systems does not fully reflect scientificity, timeliness, operability and humanism, and the seriousness of implementation is not strong. Systems cannot be internalized into the conscious awareness of teachers and students, and the team responsible for implementation is not extensive and strong enough.
Supply-Demand Matching	Inaccurate matching between the supply and demand of campus culture	There is a failure to accurately match the “meaningful” educational goals of educators with the “interesting” needs of educated individuals. The integration of ideological content and entertainment in campus cultural activities is insufficient. Some activities are empty, superficial and perfunctory, and a campus cultural community with consistent goals has not been fully formed.
Cultural Impact	The growth of mainstream culture and the impact of subcultures show a trade-off	Subcultures such as virtual culture and circle culture exert a practical impact on students through online platforms. Phenomena such as internet buzzwords like “lying flat” and “slacking off”, as well as “fan circle” economy, lead to the coexistence of mainstream culture and subcultures, posing challenges to cultural education.

tion during peak commuting hours. Additionally, prioritize campus greening and landscape design by increasing green space coverage and planting plants characteristic of Lingnan culture to create a beautiful and comfortable campus environment, as illustrated in Table 4.

Incorporate more petrochemical and Lingnan cultural elements into landscape design. Construct a petrochemical-themed plaza featuring sculptures and models depicting oil extraction and refining processes to showcase the industry’s development and achievements. Within the Lingnan cultural exhibition area, build pavilions and corridors in traditional Lingnan architectural style to display the region’s historical culture, folk customs, and artistic traditions, such as Lingnan paintings, calligraphy, and paper-cutting. Through these landscape designs, faculty and students can experience the school’s distinctive cultural atmosphere anytime and anywhere on campus.

B. ENHANCING INSTITUTIONAL CULTURAL SAFEGUARDS

Establishing comprehensive regulations forms the foundation for strengthening institutional cultural safeguards. The school should comprehensively review and revise teaching management systems, student management systems, and scientific research management systems based on national laws, regulations, and educational policies, while considering the institution’s actual circumstances. This ensures the scientific, rational, and effective nature of these regulations. Regarding teaching management systems, clearly define faculty teaching responsibilities, quality evaluation standards, and process management requirements while es-

tablishing a scientific teaching quality monitoring system. For student management systems, refine behavioral norms, reward/punishment mechanisms, and comprehensive quality evaluation frameworks to strengthen daily oversight and educational guidance. In research management systems, standardize procedures for project application, approval, implementation, and acceptance, enhance research integrity, and foster a conducive research environment.

TABLE 4. Optimization Strategies and Implementation Paths for Campus Culture Education

Strategy Category	Specific Strategies	Implementation Paths	Expected Goals
Coordination Mechanism Optimization	Build an “integrated and multi-winged” collaborative management system	1. Establish a leading group for campus cultural construction led by university leaders, with a special office attached to the Publicity Department of the Party Committee. Clarify the responsibility boundaries and collaboration processes of departments such as the Academic Affairs Office, Student Affairs Office, Youth League Committee, and secondary colleges. 2. Set up a quarterly joint meeting system to regularly analyze the pain points of cultural construction, and coordinate the allocation of resources such as special funds (no less than 3% of the school’s annual budget), venues, and faculty. 3. Formulate the “Three-Year Action Plan for Campus Cultural Construction”, incorporate cultural education goals into the annual assessment indicators of each unit, and implement “list-based management + closed-loop acceptance”.	1. Break departmental barriers and increase resource utilization rate by more than 30%. 2. Form a work pattern of “unified planning, division of responsibilities, and collaborative promotion” to avoid redundant construction and resource waste. 3. Ensure that the goals of campus cultural construction are highly consistent with the university’s positioning as a “high-level science and engineering university”.
Brand System Construction	Focus on “petroleum and petrochemical” characteristics to cultivate cultural IPs	1. Upgrade traditional activities such as the “Petroleum Culture Festival” and “Chemical Innovation Competition”, add modules like “Industry Elites Enter Campus” and “Petrochemical Spirit Lecture Hall”, and invite senior executives and technical experts from Sinopec, PetroChina and other enterprises as off-campus mentors. 2. Build a “Petrochemical Cultural Corridor” and a “University History Museum (Petrochemical Special Exhibition Area)”, use VR technology to restore oil extraction and chemical production scenes, and enhance immersive experience. 3. Cultivate the “Petrochemical Youth Volunteer Service Team”, connect with public welfare projects such as safety publicity of local petrochemical enterprises and community energy science popularization, and form a replicable characteristic service brand.	1. Create 3-5 influential cultural brand activities among universities in Guangdong Province and the petrochemical industry, with participation rate increased to over 80%. 2. Make “petrochemical spirit” (such as hard work, pursuit of excellence, safety first) a consensus among teachers and students, and integrate it into daily teaching and code of conduct. 3. Enhance the university’s cultural recognition in the petrochemical field, attracting no less than 5 sister universities or enterprises for exchange and study every year.
Content Innovation and Upgrade	Balance “ideological nature” and “interest” to meet diverse needs	1. Launch a “menu-style” list of cultural activities, allowing teachers and students to vote for activity themes (such as “Cross-border Exhibition of Chemical Engineering and Art”, “Scientific Research Decompression Workshop”) through online platforms to enhance sense of participation. 2. Rely on the university’s advantages in engineering, develop “technology + culture” integrated projects such as “Chemical Product Creative Design Competition” and “Petroleum Culture Theme Microfilm Creation”, and encourage interdisciplinary teams to participate. 3. Targeting the characteristics of Generation Z students, set up columns such as “Petrochemical Mini-class” and “Campus Culture Vlog” on platforms like Douyin and Bilibili, and spread campus culture through short videos to expand coverage.	1. Increase the satisfaction rate of campus cultural activities to over 90%, eliminating “perfunctory” and “formalistic” activities. 2. Achieve in-depth integration of cultural content with disciplinary characteristics and student interests, stimulating the internal motivation of teachers and students to participate actively. 3. The annual exposure of online cultural content exceeds 1 million times, enhancing the communication power and influence of campus culture.
System Humanization Improvement	Build a system of “rigid constraints + flexible care”	1. Revise the “Measures for the Administration of Campus Cultural Construction”, add seminars with teacher and student representatives and online opinion collection links (collecting no less than 500 valid feedbacks each time) in the process of system formulation to ensure scientificity and operability of the system. 2. Optimize the “Campus Civilization Convention”, add humanistic clauses such as “academic integrity guarantee” and “teacher-student mutual assistance mechanism”, and reduce “one-size-fits-all” regulations. For example, allow students to carry out creative cultural activities in designated areas (with advance registration). 3. Establish a “system implementation supervision group” (composed of teacher and student representatives) to regularly evaluate the effect of system implementation, revise unreasonable clauses in a timely manner, and form a dynamic adjustment mechanism of “formulation - implementation - feedback - optimization”.	1. Transform campus systems from “management-oriented” to “service-oriented”, increasing teachers and students’ recognition of the system to over 85%. 2. Avoid “rigid law enforcement” in system implementation, reflect humanistic care, and create a “warm” campus cultural atmosphere. 3. Form a good situation where “everyone participates in system construction and everyone abides by system norms”, reducing resistance to system implementation.
Subculture Guidance	Strengthen the governance model of “mainstream leadership + inclusive regulation”	1. Offer elective courses on “network literacy and values guidance”, invite psychology and sociology teachers to analyze the reasons behind phenomena such as “lying flat” and “slacking off”, and guide students to establish a positive attitude. Conduct themed class meetings on “rational discussion on fan circle culture” to resist irrational star-chasing behavior. 2. Build a “campus subculture exchange platform”, encourage legal associations such as Hanfu Association, E-sports Association, and Science and Innovation Association to carry out healthy activities, and incorporate them into the campus cultural activity system. For example, hold “Community Culture Carnival” to guide positive interaction between subcultures and mainstream culture. 3. Establish a dual support mechanism of “psychological counseling + academic assistance”, conduct one-on-one communication with students affected by negative subcultures, help them clarify development goals, and reduce the impact of negative emotions.	1. Effectively curb the impact of negative subcultures on students’ values, increasing students’ recognition of mainstream culture by more than 20%. 2. Achieve “regulation rather than suppression” of campus subcultures, creating a cultural ecology of “diversified coexistence and healthy development”. 3. Reduce the incidence of academic and psychological problems among students caused by negative subcultures, and maintain campus stability.
Evaluation Closed-loop Construction	Establish a “quantitative + qualitative” combined effect evaluation system	1. Design an evaluation index system for the effect of campus cultural education. Quantitative indicators include “activity participation rate, satisfaction rate, influence of brand activities”, etc. Qualitative indicators include “teachers and students’ cognition of campus culture, cultural reflection in behavioral performance, evaluation from external units”, etc. 2. Conduct a questionnaire survey and seminars among teachers and students every semester, and invite external experts (such as educational scholars and petrochemical industry representatives) to conduct third-party evaluations every year to form evaluation reports. 3. Formulate rectification plans based on evaluation results, clarify the responsible units and time nodes for rectification, and link the effectiveness of rectification with resource allocation in the next year.	1. Form a closed-loop management of “evaluation - feedback - rectification - improvement”, avoiding “emphasizing input over effect” in cultural construction. 2. Accurately grasp the shortcomings and deficiencies of campus cultural education, optimize strategies in a targeted manner, and improve the effectiveness of education. 3. Provide data support and decision-making reference for subsequent campus cultural construction, ensuring that every investment can produce practical benefits.

VI. CONCLUSION

Taking Guangdong University of Petrochemical Technology as a case study, this research delves into issues related to campus culture education in Chinese higher education institutions. By examining the theoretical foundations of campus culture education, this paper clarifies the essence, components, functions, and supporting educational theories

of campus culture, laying a solid theoretical groundwork for subsequent research. This framework is especially relevant to specialized fields, providing the critical theoretical basis necessary to effectively integrate the unique professional ethics and design heritage of the industry into the core campus cultural curriculum.

A. REPRESENTATIVE CHARACTERISTICS OF CASE PROBLEMS

Extracted common contradictions in campus culture education of industry-characteristic universities: insufficient integration of professional culture and campus culture, imbalanced supply-demand matching of activities, weak brand influence, and inadequate guarantee mechanisms. These problems are universally existing in industry-characteristic universities, indicating the representativeness of Guangdong University of Petrochemical Technology's case.

B. GENERALIZATION PATH OF OPTIMIZATION STRATEGIES

Established a derivation framework of "case characteristics → common laws → general paths": The experience of "cultivating characteristic cultural IPs in the petrochemical industry" is generalized into a "universal methodology for deep integration of industry culture and campus culture", including industrial element scenarization, industrial spirit curriculumization, etc. Comparative verification was conducted on 5 domestic universities with similar industry characteristics. The results showed that the proposed optimization strategies (such as brand system construction, content innovation and upgrading) were adaptable in different industry backgrounds, with the average participation rate of cultural activities increasing by 15%-20% after implementation. A robust campus culture fosters a positive learning environment, promotes students' holistic development, and enhances the institution's overall image and competitiveness. The enhancement strategies and implementation safeguards proposed in this study are expected to provide valuable reference and insights for campus culture education at Guangdong University of Petrochemical Technology and other similar institutions, thereby advancing the continuous development of campus culture education in Chinese universities.

AUTHOR CONTRIBUTIONS

Conceptualization –Xifeng Wu and Mengmeng Hu; methodology – Xifeng Wu and Mengmeng Hu; investigation – Xifeng Wu and Mengmeng Hu; writing-original draft preparation – Xifeng Wu and Mengmeng Hu. All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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