International Journal of Education and Economics

DECEMBER 2024 VOLUME 7 NUMBER 4

Publisher: ACADEMIC PUBLISHING HOUSE
Address: Quastisky Building, Road Town, Tortola, British Virgin Islands
UK Postal Code: VG1110

E-mail: editor03@acadpubl.com
http://www.acadpubl.com/ijee.aspx

ACADEMIC PUBLISHING HOUSE

CONTENTS

The Role Reconstruction of Grassroots Teaching Management Personnel in Local Universities Under the Digital Background **1**
Lina Zhou

Research on the Path to Eliminate Network Subculture in Ideological and Political Education in Higher Vocational Colleges **6**
Yijun Cui

A Social Theory Study of Automobile Suspension Design from the Perspective of Sustainable Development **11**
Changzhong Fu

Research on The Construction of Educational Element Spectrum of Cultural Confidence Theory in The Street Landscape of Vocational Colleges **18**
Kun Gao

Research Progress on Environmentally Friendly Ship Antifouling Coatings **22**
Yuqing Guo, Minjie Shi, Hongzhen Li, Yuanyuan Qu

The Development and Innovation of Traditional Printmaking Art Under the Influence of Contemporary Art **26**
Guo Yueyang

Research and Practice of Classroom Teaching Reform of "Building Construction Technology" in the Context of Informatization **30**
Jin Han

Exploration of Civics and Politics in Higher Vocational Chinese Medicine Preparation Technology Course--Taking “Pills” as an example **34**
Jinfang Hu

Practice and Thinking on Improving the Quality and Efficiency of Special Supervision in Higher Vocational Institutes **38**
Shuli Jing

Research Review of Fatigue Testing Machine **42**
Kang Li

Research on the Development of Business Industry-Education Integration in the Context of New Liberal Arts **45**
Yaoyao Li

Analysis of Internationalization Paths and Strategies for Higher Vocational Colleges **50**
Xiaoling Liu

On the Cultivation of Innovation and Entrepreneurship Ability of College Students in Vocational Education **55**
Yingcong Lu

Research Progress in Generating Electricity Materials **60**
Hongyu lv, Yawen Li, Yuanyuan Qu

Construction and Practice of Campus Public Art Space in Vocational Colleges under the Pattern of "Great Art Education"——Taking Zibo Vocational College as an example **63**
Yuan Ma

Relying on Campus Culture to Promote the Construction of Brand Activities of College Student Party Branches **66**
Yu Meng

Problems and Teaching Strategies of English Pronunciation for Higher Vocational Students.....70
Tang Fang

Analysis on The Structural Change of Japanese Automobile Industry Under the Wave of Electric Power.....74
Wang Han

Practice of Pharmacy Curriculum Reform with the Goal of High-quality Nurturing People.....79
Limei Wang

ather Image and Type Character Setting in Chinese Tv Series-- Take <The Long Season> As an Example.....83
Wei Wang

A Correlational Study on Integrity Education and Organizational Citizenship Behavior: The Mediating Role of Personal Characteristics.....87
Wenjing Wang

Professional Undergraduate Education: Innovation and Challenges in Training Talents for the New Era.....91
Xinyu Wang

Crowd-sensing Privacy Protection Mechanism based on Double Trapdoor Homomorphic Encryption.....95
Xinyu Wang

Deepening and Transformation of Innovative Thinking in Art Education under the New Context of AIGC.....99
Yu Xin

Clinical Efficacy of Pemetrexed Combined with Platinum Drugs in the Treatment of Lung Cancer.....103
Liu Yang

Research on the Positivity of "Innovation and Entrepreneurship" Education in Higher Vocational Colleges for the Growth and Development of College Students.....108
Hong Yin

Medical Simulation in Nursing Vocational Education: Applications and Developments.....112
Huaihai Yu

The Application of Red-themed Paintings in Patriotism Education in Colleges and Universities Path Exploration.....116
Guoqing Zhang

The Management Work and Path Optimization of Students in Higher Vocational Colleges Under the Background Of "Double High".....120
Wei Zhang

Research on the Cultivation of Artistic Literacy of Architectural Decoration Engineering Technology Students in Higher Vocational Colleges and Universities under Interdisciplinary Perspective.....123
Chenchen Zhao

Cash Flow Management and Strategies for Enhancing Corporate Stability from an Innovative Perspective.....127
Qi Zhao

A Three-dimensional Analysis of the Integration of Red Film and Television Resources into Ideological and Political Education in Universities.....132
Yifan Zhao

Exploration into the Comprehensive Reform Practice of Deepening the "Three-pronged Education" in Vocational Colleges 135
Yanni Zhou

Exploring Effective Teaching Strategies in College English Education 139
Jing Zheng

Ideological and Political Elements in Cultural and Creative Products: Social Responsibility and Value Orientation of the Cultural Creative Industry 143
Yao Dong

Study on the Tourism Path of Traditional Chinese Medicine Health Preservation in Zibo City Based on the RMP Model 148
Pei Geng

Constructing a Higher Education Teaching Culture Framework in the "Internet Plus" Era 154
ZhiQiang Jiang

Exploring Multiple Perspectives on Teaching Methods in College Physical Education 159
Hongfang Li, Peng Wang

Research on Digital Marketing Model Innovation for Human Settlement Projects in the Context of Internet Plus 166
Yanhong LI

Research on the Design and Evaluation of Ideological and Political Education Courses for University Students 172
MingMing Liu

Innovative Approaches to College Student Management in the Big Data Era 177
WenJie Liu

Advancing Chemical Engineering in Future Urban Development 182
ZhiYuan Mao

Implementation Models of Interdisciplinary Integration in Rehabilitation Medical Vocational Education 186
Lei Qu

Analysis of Personalized Teaching in Preschool Handicraft Education Using AI Technology 192
Tan Jing

The Impact of Digital Health Platforms on Psychological Support for Pregnant Women 197
FengChun Wang

Construction and Management of Information Platforms in Manufacturing Enterprises 202
YueJie Yin

An Analysis of the Aesthetic Composition in Logo Design 206
Mengmeng Yu

Ideological Elements in Cultural and Creative Products: Youth Cultural Identity and Value Formation 210
YanXi Zhang

From Zibo Barbecue: The Significance of Food and Cultural IP Shaping for Urban Economy and Tourism 214
Liu Jin

Research on The Construction of Virtual Teaching and Research Room for University Mathematics Curriculum Group Based on The Combination of Virtual and Real 217
Huifang Wang, Chunfeng Liu, Aimin Yang, Jianbo Liu, Tiejun Wei, Jingguo Qu

The Role Reconstruction of Grassroots Teaching Management Personnel in Local Universities Under the Digital Background

Lina Zhou
Chongqing Three Gorges University, Wanzhou, Chongqing, China

Abstract: With the rapid development of technology, digitization has penetrated into the field of higher education and become an integral part of it, exerting a significant impact on educational management and philosophy. In this context, grassroots teaching managers in local universities are facing unprecedented challenges and opportunities, and need to re-examine and adjust their roles to adapt to the rapidly changing environment, thereby promoting the improvement of teaching quality and the comprehensive development of students. This article will delve into how the role of grassroots teaching management personnel can be reshaped and enhanced in the context of digital transformation.
Keywords: Digital Transformation; Teaching Management; Role Reconstructio

1. PREFACE

Currently, the global education sector is undergoing an unprecedented transformation, with digital technology at its core fundamentally changing the way knowledge is disseminated, while also posing new challenges and requirements for the organization and management of the education system. In this transitional period, grassroots teaching managers of local higher education institutions are standing at a crossroads full of opportunities and challenges. They need to go beyond traditional frameworks, actively integrate into the digital age, and assume more diverse and specialized roles.

Faced with constantly changing educational needs and technological frontiers, grassroots teaching managers need to constantly update their knowledge structure, actively explore and implement student-centered teaching strategies, cultivate students' critical thinking, innovation ability, and lifelong learning habits. This role transition can not only enhance their professional level, but also lead the university and even the entire education system towards modernization, promoting educational equity and high-quality development. In summary, in this educational revolution, the role of grassroots teaching management personnel has become particularly important. They are not only pioneers of the digital age, but also key forces driving educational innovation and achieving sustainable development.

2. THE CORE POSITION IN THE DIGITAL TRANSFORMATION OF EDUCATION

Grassroots teaching management personnel are the key bridge connecting the administrative level of schools and frontline teaching practices. They are responsible for formulating and implementing educational policies, ensuring that these policies can be effectively translated into specific teaching activities, and promoting the improvement of teaching quality. In the current context of digital transformation in education, grassroots teaching management personnel need to possess more comprehensive and in-depth professional qualities.

Firstly, the ability to plan strategies is crucial for grassroots teaching management personnel. This not only includes the rational allocation of existing educational resources, but also involves predicting future educational trends and formulating response strategies. For example, in promoting STEM (Science, Technology, Engineering, and Mathematics) education, they need to assess the availability of school resources, design corresponding curriculum systems, and establish connections with industry partners to provide students with

practical opportunities. Secondly, resource allocation is an important component of the daily work of grassroots teaching management personnel. This is not only the allocation of material resources, but also the effective integration of resources such as time, space, and manpower. By optimizing resource allocation, existing resources can be maximized to improve teaching efficiency and quality. For example, by introducing online learning platforms to achieve the sharing of educational resources, breaking geographical limitations, and providing high-quality educational resources for more students. Furthermore, technical support capability is also an indispensable skill for grassroots teaching management personnel. With the rapid development of educational technology, how to integrate new technologies such as artificial intelligence, big data, and virtual reality into teaching practice to improve teaching effectiveness has become a direction that they need to constantly explore and practice. In short, grassroots teaching management personnel play an indispensable role in educational innovation. They not only need to have a profound foundation in traditional teaching management, but also need to embrace change, constantly improve their professional skills and leadership, and lead school education towards a more open, innovative, and efficient development path.

3. ROLE RECONSTRUCTION OF GRASSROOTS TEACHING MANAGEMENT PERSONNEL IN UNIVERSITIES

In today's rapidly changing wave of digital transformation, how should the role of grassroots teaching management personnel in local universities be reshaped and enhanced. We can restructure grassroots teaching management personnel in universities into the following five key roles:

3.1 Strategic planners: In the rapidly developing digital age, the role of grassroots teaching management personnel is particularly important. They are not only organizers and implementers of daily educational activities in schools, but also key forces in promoting educational innovation and achieving school strategic goals. Therefore, actively participating in the formulation of school development strategies, combining digital trends, and planning future educational directions have become an inescapable responsibility of grassroots teaching management personnel.

Firstly, grassroots teaching management personnel should have a deep understanding and grasp of the current application status and development trends of digital technology in the field of education. This includes but is not limited to online learning platforms, intelligent teaching tools, data analysis, and personalized teaching plans. Secondly, based on the actual situation and educational resources of the school, formulate an education development strategy that adapts to the digital age. This requires managers to deeply analyze the strengths and challenges of the school, identify the opportunities that digitalization can bring, and integrate them into the overall development plan of the school. For example, teaching quality and efficiency can be improved by establishing digital libraries, conducting online courses, and using intelligent assessment systems. Furthermore, grassroots teaching management personnel should also strive to build a supportive and inclusive digital education environment. This means providing necessary training and support for teachers and students to ensure that everyone is proficient in using new technologies. At the same time, encouraging innovative thinking and experimental spirit, allowing exploration of digital teaching practices within a safe and controllable framework, to stimulate students' creativity and critical thinking abilities. Finally, grassroots teaching management personnel need to strengthen communication and cooperation with external partners to jointly explore and develop digital solutions that meet the needs of the school. In short, grassroots teaching management personnel should fully leverage their advantages in understanding the essence of education, familiarizing themselves with digital technology, and possessing strategic vision in the process of participating in the formulation of school development strategies, leading schools towards a more open, innovative, and efficient future of education.

3.2 Resource coordinator: In the process of integrating internal and external resources,

educational managers should adopt the following strategies:

One is the comprehensive integration of digital resources: establishing a unified online platform or system to centrally integrate various digital educational resources (such as e-books, online courses, etc.) for students and teachers to access and use at any time. At the same time, encourage teachers to create and share high-quality teaching resources, promote knowledge sharing and innovation.

The second is to optimize the allocation of teaching staff: through training, communication, and collaborative projects, enhance teachers' professional abilities and teaching skills. Establish a cross school teacher sharing mechanism to enable outstanding teachers to cross geographical boundaries and provide high-quality educational services to more students. In addition, introducing industry experts as guest lecturers or consultants enhances the practicality and foresight of the course.

The third is the reasonable layout of technical equipment: according to teaching needs and students' learning habits, reasonably configure the technical equipment in the classroom, such as multimedia projectors, interactive whiteboards, VR/AR teaching equipment, etc., to support diversified teaching modes. At the same time, ensuring the stability and security of campus networks provides strong support for remote learning and online collaboration.

The fourth is the establishment of cooperation and partnerships: establish cooperative relationships with enterprises, research institutions, community organizations, etc., jointly develop project-based learning opportunities, internship positions, scientific research cooperation, etc., so that students have the opportunity to encounter real-world problems and challenges, and cultivate the ability to solve practical problems. At the same time, these partners can also provide funding, technology, and talent support for the school.

The fifth is continuous evaluation and feedback: regularly evaluate the effectiveness of resource integration and utilization, collect feedback from teachers and students, and adjust strategies and methods in a timely manner. Through data analysis, understand which resources are most popular and which aspects need improvement, in order to achieve optimized allocation and efficient utilization of resources. Through the above measures, it is possible to effectively integrate internal and external resources, build a more open, flexible, and efficient educational resource system, provide students with richer and more personalized learning experiences, and also provide teachers with better teaching support and development opportunities.

3.3 Technology supporters: In the process of promoting educational modernization, it is not only necessary for school teaching management personnel to actively embrace and master modern technology themselves, but also to provide corresponding training and guidance to teachers and students to ensure that everyone can proficiently apply these new technologies. This is not only the key to improving teaching quality, but also an important step in promoting the process of educational informatization. For teachers, they need to receive professional training on how to utilize online teaching platforms, multimedia teaching tools, virtual laboratories, and other resources to combine traditional teaching methods with modern information technology, thereby improving classroom efficiency and students' learning experience. the training content should include but not limited to the search and integration of digital educational resources, the application of online collaboration tools, and how to evaluate and provide feedback on students' learning outcomes. In addition, teachers are encouraged to engage in innovative teaching practices such as flipped classrooms, project-based learning, etc., using technological means to stimulate students' active learning interest and innovation ability. For students, mastering modern technology is a fundamental requirement for the future development of society. Schools should provide courses on basic computer operations, network security, information retrieval, and the use of digital learning tools to help students establish good digital literacy.

3.4 Teaching improvement drivers: Continuous monitoring and evaluation of teaching effectiveness is a crucial step in the educational process. This not only includes regular checks on students' academic performance, but also focuses on improving

their learning attitude, participation, and knowledge application ability. By establishing a comprehensive evaluation system and combining quantitative analysis (such as exam scores and homework completion) with qualitative analysis (such as classroom interaction and group discussion performance), teaching effectiveness can be more accurately understood. Based on the results of monitoring and evaluation, it is necessary to continuously adjust and optimize teaching methods. This may involve changing the organization of teaching content, introducing new teaching techniques or tools, adjusting teaching pace to accommodate students with different learning styles, and increasing opportunities for practical and project-based learning. In addition, strengthening home school cooperation and involving parents in their children's learning process to create a supportive and encouraging learning environment is also an important part of improving teaching quality and efficiency. In short, through continuous monitoring, evaluation, adjustment, and optimization, the education system can better adapt to social changes, meet the learning needs of different students, and ultimately achieve the goals of educational equity and high-quality education.

3.5 Supporters of Students and Teachers: Grassroots teaching management personnel need to break free from traditional management roles and transform into supporters of students and teachers centered on serving teaching. School teaching management personnel can adopt various strategies to meet the different needs of teachers and students and provide personalized support and services. Firstly, through regular surveys of the needs of teachers and students, we can understand their specific needs and expectations, including academic counseling, mental health support, career planning guidance, etc., in order to develop targeted plans and activities. Secondly, utilizing modern technological means such as artificial intelligence, big data analysis, etc., to provide personalized learning resources and paths for students. At the same time, for teachers, schools should provide professional development training, teaching resources, technical support, and psychological adjustment support to help them improve their teaching skills, reduce work pressure, and promote personal career growth. In addition, it is crucial to establish an open, inclusive, and supportive campus culture.

4. SUMMARY

In the tide of the digital age, the reshaping of the role of grassroots teaching management personnel in local universities is not only a deepening of their professional skills and knowledge, but also a fundamental innovation in their educational philosophy and management strategies. They need to work together as strategic planners, resource coordinators, technology supporters, teaching improvement promoters, and supporters of students and teachers to promote the modernization and transformation of the education system, and ensure that local universities remain in a leading position in the fiercely competitive education field. Looking ahead to the future, with the continuous iteration of digital technology, the role positioning of grassroots teaching management personnel will continue to evolve. They need to uphold the spirit of continuous learning and adaptation, adopt a flexible and adaptable attitude to meet future challenges and opportunities, ensure the vitality and sustainability of educational innovation, and thus help local universities occupy a more prominent position in the education landscape of the new era.

FUNDING

This work was supported by the CHONGQING EDUCATION COMMISSION “Research on the Construction Strategy of Basic Teaching Management Team in Local Universities under the Background of Education Digitalization”(No. 233365); CHONGQING EDUCATION COMMISSION“Research on the Construction of First Class Majors in Information and Computational Science”(No. 223308); CHONGQING EDUCATION COMMISSION “Research on digital construction of experimental teaching in local undergraduate universities-taking Chongqing Three Gorges University as an example”(No. 245012).

REFERENCES

[1] Jieqin Zheng. Construction of Teaching Administration in University on Basis of the Psychological Contract Theory [J]. JOURNAL OF ANSHUN COLLEGE, 2009, Vol. 11(4):48-50D Wood; RB Valdez; T Hayashi; A Shen. Digital transformation in higher education: a systematic review. [J]. Big Data Research, 2023, Vol. 9(3):56-70.

[2] Xiaozhong Chen; Yingchen. Implications, challenges and implementation strategies of sustainable digital transformation of education. (English)[J]. China Medical Education Technology, 2023, Vol. 37(5):499-508.

Research on the Path to Eliminate Network Subculture in Ideological and Political Education in Higher Vocational Colleges

Yijun Cui
Zibo vocational Instiute, Zibo, Shandong 255314, China

Abstract: The research focuses on the spread of network subculture in higher vocational colleges in the information age and its impact on ideological and political education. Through theoretical exploration, the concept and characteristics of network subculture are defined, and its manifestations in higher vocational colleges and challenges to ideological and political education are analyzed. Multiple elimination paths are proposed, including strengthening network literacy education, building a healthy network cultural environment, innovating ideological and political courses, utilizing new media technologies, enhancing students' self-management abilities, integrating network resources to build a platform, cultivating rational media literacy, and giving full play to the educational function of practice. the research shows that these strategies help deal with the negative impacts of network subculture, improve the effectiveness of ideological and political education, and promote the all-round development of students, providing a reference for the innovation of ideological and political education in higher vocational colleges.

Keywords: Higher Vocational Colleges; Ideological and Political Education; Network Subculture; Elimination Path

1. INTRODUCTION

1.1 Research Background

In today's information age, the popularity of the Internet has made students in higher vocational colleges an important user group of the network. Network subculture is widely spread in higher vocational colleges and appears in various forms such as online games, online songs, and online literature, which are deeply loved by students. However, network subculture has characteristics such as creativity, stylization, and marginality, and to a certain extent, it poses a challenge or supplement to mainstream culture. Its spread in higher vocational colleges has brought many challenges to ideological and political education.

1.2 Research Purpose

Exploring the path to eliminate the negative impacts of network subculture and improve the effectiveness of ideological and political education has important practical significance. the existence of network subculture may lead to the distortion of students' values, the decline of thinking ability, and the weakening of moral consciousness. Through in-depth research on the impact of network subculture on ideological and political education in higher vocational colleges, we can find effective elimination paths to help students establish correct values and improve the effectiveness of ideological and political education. This not only helps cultivate students' sense of social responsibility and mission but also helps promote the innovation and development of ideological and political education in higher vocational colleges.

2. THEORETICAL BASIS OF NETWORK SUBCULTURE AND IDEOLOGICAL AND POLITICAL EDUCATION IN HIGHER VOCATIONAL COLLEGES

2.1 Concept and Characteristics of Network Subculture

As a unique cultural phenomenon, network subculture has significant characteristics such as marginality, criticalness, and trendiness.

2.1.1Marginality and College Students' Psychology

The marginality of network subculture makes it easy for college students to escape from reality. According to relevant research, college

students are an important part of China's network subculture group. Because their thoughts and behaviors are difficult to adapt to mainstream culture, they look for a sense of identity in the virtual network environment. College students in adolescence are easily unable to find a sense of belonging and identity in real life, leading to psychological closeness and confusion on the path of cultivating the three outlooks.

2.1.2Criticalness and Value Judgment

The criticalness of network subculture is easy to mislead college students' value judgments. College students at the youth stage have active thinking and like to evaluate things from unique or critical perspectives. In the virtual online world, many college students interpret various things in life from unique perspectives and clarify the essential connotations with special language expressions. Due to reasons such as being young and lacking rich life experiences, some college students are prone to being arbitrary or deviated in value judgments and even engage in blind following behaviors without thinking.

2.1.3Trendiness and Value Orientation

The trendiness of network subculture has a confusing effect on college students' value orientations. the information dissemination of the Internet has the advantage of being convenient and fast. Once some popular fashion elements are released on the Internet, they can spread among people in a very short time. the bad elements filled in the network trend elements are easily widely spread among college students under the cover of the network trend. Some college students with poor judgment are extremely vulnerable to adverse influences, resulting in behaviors or ideas such as taking shortcuts, not being down-to-earth, and blindly borrowing without considering the actual situation, thus distorting their correct value orientations.

2.2 Importance of Ideological and Political Education in Higher Vocational Colleges Ideological and political education in higher vocational colleges plays a key role in helping college students establish correct three outlooks.

2.2.1Goals and Tasks of Ideological and Political Education

The goal of ideological and political education in higher vocational colleges is to cultivate students with morality, ideals, and culture, establish correct three outlooks, and ensure the smooth implementation of various educational policies of the Party. the task of ideological and political education is to guide students to establish correct worldviews, outlooks on life, and values through theoretical teaching and practical activities, and cultivate students' sense of social responsibility and mission.

2.2.2Status of Ideological and Political Education in Talent Cultivation Ideological and political education occupies a core position in talent cultivation in higher vocational colleges. the talent cultivation goal of higher vocational colleges is to cultivate high-quality technical and skilled talents who not only have solid professional knowledge and skills but also have good ideological and moral qualities and professional qualities. Ideological and political education is an important way to cultivate students' ideological and moral qualities and professional qualities. Through ideological and political education, students can be guided to establish correct career outlooks and values and cultivate students' professional ethics and professional spirits.

3. IMPACT OF NETWORK SUBCULTURE ON IDEOLOGICAL AND POLITICAL EDUCATION IN HIGHER VOCATIONAL COLLEGES

3.1 Weakening the Dominance of Educators

The rise of network subculture has had an impact on the traditional ideological and political education model, and the authority of teachers has been challenged. In traditional ideological and political education, teachers are in a dominant position, and students passively accept knowledge. In the network subculture environment, students can obtain a large amount of information through the Internet. They are no longer satisfied with passively accepting the indoctrination education of teachers but hope to participate in the teaching process and express their own views and ideas. In addition, the spread speed of network subculture is fast and the scope is wide. the information advantage of teachers is weakened, and the traditional ideological and political education model is broken.

3.2 Affecting Students' Value Concepts and Action Choices

There are some negative ideological trends in network subculture, such as historical nihilism, hedonism, extreme individualism, etc. These ideological trends conflict with students' original value systems and belief systems, leading to the decline of some college students' thinking ability and the weakening of moral consciousness. the Internet has created a virtual society that transcends time and space barriers. Multiple social ideological trends surge on the Internet. Some college students are easily influenced by bad ideological trends and produce wrong value concepts and action choices.

4. PATHS TO ELIMINATE NETWORK SUBCULTURE IN IDEOLOGICAL AND POLITICAL EDUCATION IN HIGHER VOCATIONAL COLLEGES

4.1 Strengthen Network Literacy Education

Network literacy education is the basis for eliminating the influence of network subculture. Through systematic teaching activities, students' information screening ability, judgment ability, and network moral level are improved to help students correctly understand and use network subculture. the educational content should include network security knowledge, network moral norms, information screening and judgment skills, etc. At the same time, students are encouraged to participate in practical activities of network moral education to improve their network literacy.

4.2 Build a Healthy Network Cultural Environment

Building a positive and healthy network cultural environment is crucial for eliminating the adverse effects of network subculture. Higher vocational colleges can cooperate with Internet enterprises to strengthen the supervision of network content, filter out bad information, and promote positive and healthy network cultural products. At the same time, schools can also enrich students' network cultural life and guide students to form correct network behavior habits by holding network culture festivals and network moral lectures.

4.3 Strengthen the Innovation of Ideological and Political Course Content and Form

Ideological and political courses are the main channels for value education in higher vocational colleges. Facing the challenges of network subculture, ideological and political courses need to be innovated in content and form. In terms of content, teaching content related to network culture should be added to guide students to correctly view network subculture phenomena. In terms of form, network technology means such as online discussions and virtual classrooms can be used to improve the attractiveness and interactivity of ideological and political courses.

4.4 Use New Media Technology for Ideological and Political Education

New media technology provides a new platform and means for ideological and political education. Higher vocational colleges can use new media tools such as social media and short video platforms to carry out various ideological and political education activities. For example, by producing and sharing short videos and graphic information with positive energy, socialist core values can be spread in a way that students love to see, improving the effectiveness of ideological and political education.

4.5 Enhance Students' Self-Management Ability

Students' self-management ability is the key to eliminating the influence of network subculture. Higher vocational colleges should educate students to reasonably arrange their online time and develop good network usage habits. At the same time, schools can also establish student self-discipline organizations, carry out self-management education, and cultivate students' self-control ability and self-education ability.

4.6 Integrate Network Resources and Build a Comprehensive Ideological and Political Education Platform

Integrating network resources and building a comprehensive ideological and political education platform that integrates functions such as information release, online education, and interactive communication can improve the systematization and comprehensiveness of ideological and political education. This platform can collect high-quality network cultural resources and provide rich learning content. At the same time, it can also serve as an interactive community for ideological and

political education to promote exchanges and discussions between teachers and students.

4.7 Cultivate Rational Analytical Media Literacy

Cultivating college students' media literacy so that they can rationally analyze network information is an important means to resist the adverse effects of network subculture. Colleges and universities can improve students' ability to analyze and evaluate media content through education and training, teach them how to distinguish false, inaccurate information and biased viewpoints, and encourage students to actively seek diverse and authoritative information sources and compare and evaluate different viewpoints.

4.8 Give Full Play to the Educational Function of Practice

Through practical activities, college students can personally experience and feel the influence of network subculture and gradually cultivate healthy network behaviors and values in practice. Colleges and universities can organize social practice projects, carry out research on scientific research and innovation projects, offer practical courses and organize club activities, and conduct social practice and volunteer services to enable students to improve their media literacy and creative thinking ability in practice.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Research Conclusions

Through in-depth analysis of the impact of network subculture on ideological and political education in higher vocational colleges, this paper discusses the characteristics of network subculture, its impact on higher vocational students, and the paths to eliminate its impact. the research finds that network subculture has a complex impact on ideological and political education in higher vocational colleges, presenting both challenges and opportunities. the existence of network subculture makes ideological and political education face problems such as the diversification of students' values and insufficient information screening ability, but at the same time, it also provides new platforms and means for ideological and political education.

5.2 Policy Recommendations

5.2.1Strengthen network literacy education: Higher vocational colleges should incorporate network literacy education into the teaching plan to cultivate students' network moral consciousness and information screening ability.

5.2.2Build a healthy network cultural environment: Schools should cooperate with Internet enterprises to strengthen the supervision of network content, filter out bad information, and promote positive and healthy network cultural products.

5.2.3Innovate ideological and political education methods: Utilize network technology and platforms to innovate ideological and political education methods and means to improve education interactivity and effectiveness.

5.2.4Integrate network resources: Build a comprehensive ideological and political education platform, integrate network resources, provide rich learning content, and promote exchanges and discussions between teachers and students.

5.2.5Strengthen the educational function of practice: Through practical activities, enable students to personally experience and feel the impact of network subculture and gradually cultivate healthy network behaviors and values in practice.

REFERENCES

[1] Zhao Dongyang. Analysis of the Path of Ideological and Political Education for College Students from the Perspective of Network Subculture [J]. Journal of Jilin Agricultural Science and Technology University, 2019, 28(02):52-56+120.

[2] Ming Chengman, Zhao Hui. Research on the Path of Integrating Excellent Traditional Culture Education and Ideological and Political Course Teaching [J]. Educational Review, 2019, (02):112-116.

[3] Liu Yuhong. Exploration of Ideological and Political Education in Higher Vocational Colleges under the Guidance of the Socialist Core Value System [J]. the Science Education Article Collects (Mid-Journal), 2020, (02):32-33. DOI:10.16871/j. cnki. kjwhb. 2020.01.014.

[4] Chen Fuyun. Research on the Reform Path of Ideological and Political Education in Higher Vocational Colleges under the Background of the New Era [J]. Science and

Technology Information, 2020, 18(14):222-223. DOI:10.16661/j. cnki. 1672-3791.2020.14.222.

[5] Chen Jun. Difficulties and Countermeasures of College Students' Socialist Core Values Education from the Perspective of Cultural Inheritance [J]. Modern Education Science, 2017, (12):51-59. DOI:10.13980/j. cnki. xdjykx. 2017.12.010.

[6] Wang Wenting, Chen Jinshi. Research on the Integration of Ideological and Political Education in Higher Vocational Colleges from the Perspective of Aesthetic Education Infiltration [J]. Public Relations World, 2024, (18):118-120.

A Social Theory Study of Automobile Suspension Design from the Perspective of Sustainable Development

Changzhong Fu*
College of Automobile Engineering, ZiBo Vocational Institute (ZBVC), Shangdong, Zibo, 255314, China.
**Corresponding Author.*

Abstract: Some vivid textbooks and role models provide students with intuitive teaching experiences, environmental problems, the automotive industry is facing a major challenge of sustainable development. As an important part of automobile, the design of automobile suspension system not only affects the performance and comfort of the vehicle, but also is closely related to environmental protection, resource conservation and social responsibility. From the perspective of sustainable development, this paper explores the social theory of automotive suspension design, analyzes its impacts at the economic, environmental and social levels, and proposes corresponding design strategies and recommendations. Through literature review and case study, this paper aims to provide theoretical support and practical guidance for the sustainable design of automobile suspension.

Keywords: Sustainability; Automobile Suspension; Social Theory; Design Strategy; Environmental Protection

1. INTRODUCTION

In the context of globalization, the rapid development of the automobile industry has promoted economic prosperity, but it has also brought about many environmental problems, such as air pollution, resource consumption and traffic congestion. In the face of these challenges, it has become imperative to promote the transformation of the automotive industry towards sustainable development. As an important system connecting the body and wheels, automobile suspension directly affects the driving performance, ride comfort and safety of the automobile. Therefore, it is particularly important to conduct research on its sustainable design.

Sustainable development refers to meeting the needs of the present without compromising the ability of future generations to meet their needs. Sustainability in automotive suspension design not only involves innovation at the technological level, but also concerns the balance of multiple interests of society, economy and environment. In this context, how to integrate the concept of sustainable development into automotive suspension design has become a research hotspot in both academia and industry.

The purpose of this paper is to explore the role of automobile suspension design in sustainable development through the study of social theory of automobile suspension design and to propose corresponding design strategies. Specific objectives include: analyzing the social impacts of automotive suspension design; exploring the requirements of sustainable development for automotive suspension design; and proposing sustainability strategies to optimize automotive suspension design.

2. SOCIAL-ECOLOGICAL SYSTEMS THEORY AND SUSTAINABLE DESIGN

According to the theory of social-ecological system, any individual and society are organic components embedded in a complex ecological environment, interdependent and co-evolving. Under this theoretical perspective, automobile suspension design is no longer just an engineering problem, but a complex that is closely linked with multiple social elements such as human lifestyle, environmental protection and economic development.

2.1 Basic Theory of Automobile Suspension

Design

Automobile suspension system is mainly composed of springs, shock absorbers and control arms, etc. Its main function is to absorb the impact of the road surface and improve the handling and comfort of the vehicle. In recent years, with the development of material science and mechanical engineering, suspension design has gradually developed towards lightweight, intelligent and multi-functionalization. the core objective of automotive suspension design is to balance vehicle handling, ride comfort and safety.

The theoretical basis of automotive suspension design mainly involves mechanics, vibration theory and control theory: the suspension needs to withstand the dynamic loads from the vehicle and the road surface, and through the combination of springs and shock absorbers, it absorbs the vibration with appropriate damping characteristics to ensure the stability of the vehicle and the comfort of passengers. the vibration response of the suspension system at different frequencies is studied, and the suspension parameters (e. g. spring stiffness, damping ratio) are optimized to reduce the vibration transmission and improve the ride quality. In modern vehicles, the suspension system often integrates intelligent control units, such as Electronic Stability Program (ESP) and Active Suspension Control, to achieve fine control by monitoring the vehicle status in real time and dynamically adjusting the suspension stiffness and damping.

Vehicle suspension design is a complex engineering discipline that integrates multidisciplinary knowledge with the aim of providing optimal vehicle performance and ride experience under various driving conditions.

2.2 Theories of Sustainable Development

The theory of sustainable development emphasizes the coordinated development of economy, society and environment. [1] In automobile design, effective utilization of resources, environmental protection and social responsibility need to be considered comprehensively [2]. the research on sustainable development theory by scholars at home and abroad mainly focuses on the following aspects:

In order to improve resource efficiency, suspension design tends to use high-strength, lightweight materials, such as aluminum alloys and composite materials, which not only reduces the weight of the entire vehicle and lowers fuel consumption, but also reduces the amount of raw materials used, in line with the concept of sustainable development. Efficient manufacturing processes, such as precision casting and CNC machining, reduce material waste and energy consumption, while also shortening the production cycle, reducing the environmental impact per unit of product, and optimizing the production process. Through optimized design, such as the use of integrated structures to reduce the number of components, or the application of new vibration damping technology to improve material utilization, the suspension system can maintain or even improve the performance while reducing resource inputs to achieve higher resource efficiency. Considering the recyclability of the product at the beginning of suspension design, the use of materials that are easy to separate and recycle facilitates disassembly and recycling at a later stage, reduces the generation of waste and promotes the recycling of resources. Resource efficiency has become a factor that cannot be ignored in automotive suspension design, which prompts designers to pay more attention to saving resources and reducing environmental loads under the premise of guaranteeing performance, and promotes the development of the whole industry in a greener and more sustainable direction.

The application of Life Cycle Assessment (LCA) to suspension design has prompted designers to consider the environmental impact of products from a cradle-to-grave perspective. Covering the entire process from raw material extraction, manufacturing, use to disposal, LCA has a profound impact on suspension design: it encourages designers to prioritize environmentally friendly materials, such as recyclable and low-energy materials, and to optimize production processes to reduce energy consumption and emissions. In the design stage, LCA can identify links with high environmental impact, prompting designers to adopt lighter and more compact designs, reduce resource consumption, and improve energy efficiency. LCA considers energy efficiency during the vehicle use stage,

pushing suspension design in the direction of reducing friction and energy consumption, and indirectly reducing carbon emissions. LCA emphasizes the recyclability and ease of handling of products, prompting designs to consider LCA emphasizes the recyclability and easy disposal of products, pushing the design to consider the compatibility of materials and the convenience of recycling, reducing the long-term impact of waste on the environment. LCA guides suspension design from a single performance-oriented to a comprehensive environmental benefit-oriented approach, promoting greener and more sustainable design concepts and practices.

Social responsibility drives automakers to pay more attention to the safety of passengers and pedestrians. In suspension design, vehicle stability and handling are improved by optimizing damping performance and response speed, effectively reducing the risk of accidents and protecting occupant safety. In order to fulfill their environmental responsibility, the designs tend to adopt recyclable and low-emission materials and production processes to reduce the impact on the environment, such as the use of recycled plastics and lightweight alloys, while reducing the use of hazardous chemicals. From an energy consumption perspective, suspension design is optimized to reduce unnecessary weight and friction, improve fuel efficiency or increase EV range. At the same time, the carbon footprint is indirectly reduced by reducing material consumption and streamlining production processes. Social responsibility leads to more humanized designs that consider ride comfort under different driving conditions and reduce health problems that may be associated with long hours of driving, such as by intelligently adjusting suspension stiffness to adapt to various road conditions. A positive social responsibility image becomes part of a brand's competitiveness, prompting automakers to incorporate more environmentally friendly and user-friendly elements in suspension design to meet consumer expectations of social responsibility. Social responsibility not only drives the innovation of suspension design technology, but also promotes the overall sustainable development of the automotive industry, reflecting the overall care of companies for society, the environment and consumers.

2.3 Current Status of Research on Sustainable Design of Automobile Suspensions

Research on sustainable design of automotive suspension is gradually increasing, mainly focusing on five aspects: material and process innovation, intelligent and adaptive suspension system, optimal design and simulation technology, life cycle assessment and circular economy, and social and user demand orientation [3].

One of the centers of sustainable design is innovation in materials and processes. Researchers are exploring the use of high-performance, lightweight and recyclable materials, such as carbon fiber composites, high-strength steel and aluminum-magnesium alloys, to reduce the weight of suspensions and improve energy efficiency. At the same time, environmentally friendly manufacturing processes, such as precision casting and powder metallurgy, are being used to reduce material waste and energy consumption, as well as carbon emissions during production [4].

Intelligent suspension systems, such as active and semi-active suspensions, provide a better driving experience by adjusting damping and stiffness based on real-time road conditions. These systems utilize sensors, controllers, and actuators to achieve dynamic adjustments that not only improve fuel efficiency, but also reduce negative impacts on the environment. In addition, the adaptive suspension better adapts to different driving styles and road conditions, enhancing the vehicle's versatility [5].

The application of modern design tools and simulation techniques has made suspension design more accurate and efficient. Through Computer Aided Design (CAD) and Finite Element Analysis (FEA), designers are able to evaluate the performance and durability of suspensions during the design phase, reducing the need for physical prototypes and saving resources. In addition, dynamic simulation technology helps optimize the response characteristics of the suspension to improve driving comfort and safety [6].

Life Cycle Assessment (LCA) is widely used

to assess the environmental impacts of suspension design from raw material acquisition, production, use to disposal. Based on the results of LCA, designers can optimize material selection and design to reduce the environmental footprint. the circular economy concept encourages suspension designs to consider product recyclability and remanufacturability, such as the use of modularized designs and easy-to-disassemble structures to facilitate recycling of parts and extend product life [6].

As society's concern for environmental protection and health increases, users are demanding more sustainability and comfort from their automobiles. Sustainable design research not only focuses on technical specifications, but also considers user needs and social responsibility, such as enhancing the driving and riding experience by reducing noise and vibration while minimizing the impact on the environment [7].

3. STATUS AND CHALLENGES OF AUTOMOTIVE SUSPENSION DESIGN FROM A SUSTAINABLE PERSPECTIVE

Automotive suspension design is gradually moving towards green, intelligent and personalized. On the one hand, the application of lightweight materials and structural optimization reduces fuel consumption and carbon emissions; on the other hand, intelligent sensing and control systems greatly enhance driving safety and comfort. However, these advances are also accompanied by a series of challenges, such as rising costs, over-exploitation of resources and waste management.

3.1 Economic Impact

The design of automobile suspension is directly related to the performance and safety of the vehicle, which in turn affects the consumer's decision to purchase a vehicle. High-performance suspension systems can improve the market competitiveness of vehicles and bring greater economic benefits to manufacturers. At the same time, optimized suspension design can reduce maintenance costs and extend the service life of the vehicle.

3.2 Environmental Impacts

The design and choice of materials for suspension systems have a direct impact on the environment. the use of lightweight materials can reduce the energy consumption and emissions of vehicles and meet the requirements of sustainable development. In addition, the recyclability of materials should be considered during the design process to reduce waste generation.

3.3 Social Impacts

Automotive suspension design also involves social responsibility, especially in terms of safety and comfort. Good suspension design can improve driving stability, reduce accident rates and protect the safety of drivers and passengers. At the same time, a comfortable ride can also enhance user satisfaction and happiness.

4. VEHICLE SUSPENSION DESIGN STRATEGIES FOR SUSTAINABLE DEVELOPMENT

4.1 Material Selection Strategy

In terms of material selection, priority should be given to renewable and environmentally friendly materials. For example, the use of lightweight materials such as composite materials and aluminum alloys can not only reduce the weight of the suspension system, but also reduce energy consumption and emissions. Aluminum alloy is characterized by light weight and high strength. In the suspension system, the use of aluminum alloy to manufacture control arms, steering knuckles and other components can effectively reduce the unsprung mass. Reducing unsprung mass can improve vehicle handling performance and reduce energy consumption. For example, some high-end new energy vehicle brands make extensive use of aluminum alloys in key suspension components, resulting in significant improvements in vehicle range and power response. High-strength steel can be used for suspension components that are subject to greater stress, such as suspension springs. At the same time, composite materials such as carbon fiber reinforced composites can be applied to some special parts with high weight and strength requirements. Carbon fiber material has the advantage of high specific strength and specific modulus, but the cost is higher. Through reasonable structural design, the combination of high-strength steel and composite materials can ensure the

performance of the suspension and control the cost to a certain extent [8].

4.2 Design Optimization Strategies

Optimize the design of the suspension system through techniques such as Computer Aided Design (CAD) and Finite Element Analysis (FEA). the geometry of the suspension is optimized to improve the handling limit and driving safety of the vehicle. At the same time, the reliability design of suspension components is strengthened to ensure that the suspension components can work safely and reliably under various working conditions by means of simulation analysis and test verification. For example, strengthening the design of key suspension components such as ball joints and bushings to extend service life and reduce the risk of failure. These techniques help engineers predict suspension performance at the design stage, thereby reducing material waste [9].

4.3 Intelligent Design Strategy

The development of intelligent suspension system is the trend of future development. Intelligent suspension system based on sensor and electronic control technology can adjust the stiffness and damping of the suspension in real time according to the road condition, vehicle speed and vehicle load. Under different driving conditions, it provides drivers and passengers with the best comfort and handling stability. For example, the suspension height is automatically lowered to improve driving stability at high speeds, and the damping is increased to reduce body vibration when passing over bumpy roads. Through the application of sensors and control algorithms, the intelligent suspension is able to adjust the suspension parameters in real time to adapt to different road conditions and improve vehicle handling and comfort.

4.4 Life Cycle Assessment

A comprehensive life cycle assessment should be carried out at the design stage, taking into account the entire process from material acquisition, production and manufacturing to use and disposal, so as to ensure the sustainability of suspension design. In the manufacturing process of suspension components, promote the use of environmentally friendly processing technology. For example, water-based paints are used instead of traditional organic solvent paints for component coating to reduce emissions of volatile organic compounds (VOCs). At the same time, advanced forging and casting processes are used to improve material utilization, reduce scrap rates, and reduce resource waste. Design suspension structures that are easy to disassemble and recycle. In terms of component connection methods, use easy-to-disassemble snap or bolt connections instead of complicated welding or bonding methods. When the vehicle is scrapped, the suspension components can be easily separated and recycled, increasing the material recycling rate and reducing the pressure on the environment.

5. CASE STUDIES

5.1 Tesla's Suspension Design

As a leader in electric vehicles, Tesla's suspension design fully integrates cutting-edge technology and performance optimization, demonstrating a unique insight into the future of automotive design concepts. All Tesla models are equipped with the advanced Adaptive Suspension System, which automatically adjusts the height and stiffness of the suspension according to the vehicle load, road conditions, and even the driver's preference, providing the ultimate in driving comfort and maneuverability.

High-end models such as Tesla Model S Plaid and Model X adopt intelligent air suspension, which anticipates and adjusts suspension settings through data collected by on-board sensors, ensuring a smooth ride even when faced with complex road conditions. In order to further enhance range and handling, Tesla uses a large number of lightweight materials, such as aluminum alloys and composite materials, in the suspension system, which not only ensures a sturdy and reliable suspension, but also effectively reduces the total weight of the vehicle.

Tesla's suspension design is seamlessly integrated with the vehicle chassis, which not only optimizes the spatial layout, but also achieves more efficient energy transfer and better aerodynamic performance, providing solid support for the vehicle's high performance and long range. With Over-the-Air (OTA) technology, Tesla can remotely push suspension control software updates to improve suspension performance without the

need for owners to visit the store, ensuring that the vehicle is always up-to-date and in optimal condition. Tesla's suspension design fully demonstrates its extreme pursuit of technological innovation and user experience, which not only improves vehicle performance, but also sets a new benchmark for the electric vehicle industry.

5.2 BMW's Sustainable Design Practices

BMW is actively pursuing a sustainable concept in suspension design, using recyclable materials and conducting life cycle assessments. BMW's electric models use aluminum alloys and high-strength plastics in the suspension system, reducing overall weight and improving energy efficiency. the BMW Group has demonstrated its leadership in environmental protection and social responsibility by integrating sustainability concepts into suspension design while pursuing superior performance, through innovative materials, optimized processes and intelligent technologies.

BMW's use of high-strength steel, aluminum alloys and carbon fiber composites not only reduces the weight of the suspension and improves the vehicle's energy efficiency, but also reduces the environmental footprint of the materials, demonstrating its commitment to the efficient use of resources. In the production process, BMW is committed to reducing energy consumption and emissions, and through environmentally friendly processes such as precision casting and powder metallurgy, it improves material utilization and reduces waste during production. BMW's Adaptive Suspension System automatically adjusts to driving conditions and road surfaces, which not only improves driving comfort and safety, but also optimizes the vehicle's dynamic performance and reduces unnecessary energy consumption.

BMW conducts Life Cycle Assessment (LCA) at the design stage, considering the environmental impact of the suspension throughout the entire process from raw material extraction to product end-of-life, guiding material selection and design optimization, and committing itself to creating green and closed-loop automotive products.

BMW suspension adopts a modular design that facilitates disassembly and recycling, which improves the recyclability of the product, while simplifying the maintenance process and reducing resource consumption and waste generation. These sustainable design practices of BMW not only reflect its commitment to environmental protection, but also demonstrate the automotive industry's active exploration and practice on the road to sustainable development.

6. CONCLUSION AND OUTLOOK

The sustainability of automotive suspension design is not only related to vehicle performance and safety, but also to environmental protection and social responsibility. Through the social theory research on automotive suspension design, this paper proposes several sustainable design strategies, including material selection, design optimization, intelligent design and life cycle assessment.

In the future, with the continuous progress of technology, the sustainable design of automobile suspension will develop towards higher intelligence and environmental friendliness. It is hoped that the research in this paper can provide useful reference and guidance for the automobile industry in sustainable development.

REFERENCES

[1] Xu P, Hu B. Design and simulation of automobile suspension damping system based on finite element [J]. Forestry Machinery and Woodworking Equipment, 2023, 51(08).

[2] Sun X. Research on the control of automobile active air suspension system in the context of intelligent networked vehicles [J]. Automotive Test Report, 2023, (13):146-148.

[3] Yun C, Jia H. Analysis of dynamic characteristics of automobile linear and nonlinear suspension systems [J]. Journal of Inner Mongolia University of Science and Technology, 2019, 38(04):399-403.

[4] Fu C, Lu J, Ge W, et al. A Review of Electromagnetic Energy Regenerative Suspension System & Key Technologies [J]. Cmes-Computer Modeling in Engineering & Sciences, 2023, 135(3)

[5] Lu J, Li B, Ge W, et al. Analysis and experimental study on servo dynamic stiffness of electromagnetic linear actuator [J]. Mechanical Systems and Signal Processing, 2022, 169:108587.

[6] Lu J, Gu C, Zhao Y, et al. Refined modeling method and analysis of an electromagnetic direct-drive hydrostatic actuation system [C]Actuators. MDPI, 2022, 11(10):281.
[7] Lu J, Chang S. Precise motion control of an electromagnetic valve actuator with adaptive robust compensation of combustion force [J]. Journal of the Franklin Institute, 2019, 356(4):1750-1770.
[8] Zhou W, Wang H, Liang Y, et al. Research on K&C characteristics of automobile suspension [J]. Automotive Engineer, 2019, (08):18-20.
[9] Song S. Design and simulation of active suspension control system for electric vehicles [J]. Automotive components, 2019, (03):23-26.

Research on The Construction of Educational Element Spectrum of Cultural Confidence Theory in The Street Landscape of Vocational Colleges

Kun Gao
Zibo Vocational College Technology and Planning Development Center, Zibo City, Shandong 255300, China

Abstract: The theory of cultural confidence is the most fundamental, profound, and enduring force of the three major confidences. With the development of vocational colleges, the country has higher requirements for the quality of talent cultivation, and cultivating skilled craftsmen and high-tech talents has become a necessary path. In the process of talent cultivation, it is more urgent to promote cultural confidence. At present, although vocational college campus landscapes promote the spirit of craftsmanship and national ideological slogans, the overall presentation is non systematic and non targeted education. There is less emphasis on the education of cultural confidence theory, and more on classroom knowledge. There is also less emphasis and involvement in the cultivation of campus landscape ideological and political classrooms. This article aims to explore the elements of cultural confidence education in the most important street landscapes among vocational college students, in order to promote the layout and design of ideological and political education, and better focus on the spiritual growth of students and the effectiveness of national policies in vocational colleges.

Keywords: Cultural Confidence Theory, Street Landscape, Spectrum of Educational Elements

1. THE CONNOTATION OF CULTURAL CONFIDENCE

General Secretary Xi pointed out that strengthening cultural confidence is a major issue related to the rise and fall of the country, cultural security, and the independence of the national spirit. Since the 18th National Congress of the Communist Party of China, General Secretary Xi has made many profound interpretations from the perspective of the overall cause of socialism with Chinese characteristics, pointing out that cultural confidence is a more fundamental, extensive, and profound confidence, and a more basic, profound, and lasting force. China has a firm confidence in its path, theory, and system, which is essentially a cultural confidence built on the foundation of over 5000 years of civilization inheritance. Cultural confidence is not only a reflection of significant progress in social practice, but also an inherent requirement for achieving the great rejuvenation of the Chinese nation. How to better understand and promote cultural confidence has become an important issue related to the overall development of our country. In the field of education, how to efficiently understand and promote the integration of cultural confidence into all-round education is a problem worthy of attention and urgently needs to be solved.

There are various interpretations in the academic community regarding the definition of cultural confidence. Mr. Fei Xiaotong once believed that cultural confidence refers to the self awakening, self reflection, and self construction of one's own culture by people living in a certain cultural and historical circle, who have a full understanding of the development process and future of culture. Chen Xianda (2018) believes that cultural confidence is a comprehensive judgment of the historical origin, development, spiritual traits, and essence of Chinese culture. It is a

fundamental stance and attitude that upholds scientific, respectful, inheritable, and creative promotion of Chinese culture. Zhangjiang (2019) believes that cultural confidence refers to a country, a nation, or a political party's high confidence in its own cultural ideals and values, firm belief in its own cultural vitality and creativity, persistent adherence to its own cultural development direction and path, and strong determination to maintain its spiritual independence in the turbulence and integration of world cultures. Therefore, the author believes that regardless of the definition, it aims to indicate the comprehensive construction of self-awareness of Chinese culture from the starting point of cultural consciousness, to explore cultural self-awareness through cultural consciousness, to precipitate and elevate the unique spiritual identity of the Chinese nation through cultural self-awareness, to promote the establishment of cultural confidence of the Chinese nation, and then to promote cultural self-improvement. Further building a socialist cultural and educational powerhouse in the new era.

Clarifying the main connotations of cultural confidence is essential for practical education. General Secretary Xi pointed out that "the excellent traditional Chinese culture nurtured in over 5000 years of civilization development, the revolutionary culture and advanced socialist culture nurtured in the great struggle of the Party and the people, have accumulated the deepest spiritual pursuit of the Chinese nation and represent the unique spiritual identity of the Chinese nation. " the content of cultural confidence education can be determined from unique spiritual identities such as excellent traditional Chinese culture, revolutionary culture, and advanced socialist culture. Zhong Chengxiang believes that the connotation of cultural confidence includes three aspects. One is to be confident that the excellent traditional Chinese culture contains the excellent cultural genes of the Chinese nation, demonstrates the thinking ability, spiritual character, and civilization quality of the Chinese nation, and embodies the unique aesthetic style of the Chinese nation. Therefore, it has strong vitality and is an ideological resource for building the contemporary spirit of the Chinese nation. Second, we should be confident of the eternal charm of the revolutionary culture and red culture created by the people under the leadership of the CPC, inherit and carry forward the revolutionary culture and red culture, and constantly enrich and enhance the contemporary advanced culture with Chinese characteristics, which is the essence of building a cultural power. Third, we should be confident that the core socialist values can condense the soul and spirit, strengthen the foundation and consolidate the foundation, and become the common ideological basis for the people of the whole country to unite and struggle.

2. ANALYSIS OF THE LEVELS AND RELATED ISSUES OF STREET LANDSCAPE EDUCATION IN VOCATIONAL COLLEGES

At present, there are still some problems with the street landscape of some vocational colleges, such as lack of cultural characteristics, monotonous design, and disconnection from campus culture. These issues constrain the dissemination and promotion of cultural confidence. Only when the Party's campus planning possesses the characteristics of stimulating curiosity and promoting casual communication and conversation, can the campus atmosphere it creates have the truly widest educational connotation

Observations of many university campuses indicate that, when weather permits, a large amount of casual communication, encounters, entertainment, and learning exchanges between classes occur outdoors. This is because in modern cities, campus life largely occurs in outdoor spaces between buildings. For students, they are the main users of the campus, and the campus' landscape 'is crucial for providing an imaginative campus life. Whether it is a city scene dominated by hard pavement or a forest campus with a rural style and numerous trees, the feeling it gives is completely different. the difference between the two is not in the design of a certain building, but in the scale, design, and details of the environment between buildings.

3. CONSTRUCTION OF CONFIDENT ELEMENT SPECTRUM FOR CAMPUS STREET LANDSCAPE CULTURE

UNDER MULTI SENSORY PERSPECTIVE

Campus street landscape is an important component of campus landscape. Firstly, the campus street landscape not only connects important buildings, green spaces, water surfaces, activity venues, etc. within the campus, but also constitutes an important landscape component in itself. In terms of land area, the area of campus roads accounts for about 10% of the total campus land area, which determines the quality of its environment and directly affects the overall quality of the campus environment. Secondly, the street landscape plays an important role in terms of pathways, transportation, and hidden classroom education. It is an image corridor, public space, and educational venue that reflects the campus landscape and historical context. Thirdly, street landscape is the skeleton and framework of the overall layout and environment of a university campus. Walking on the street can create a perception of the landscape and create an image of the campus as a whole. Fourthly, campus street landscapes not only serve people, but also organize their activities, educate their cognition and behavior. Therefore, a well-designed and well connected road system with environmental elements is an important factor in creating a clear and personalized campus environment. On campus, there are a large number of students commuting between different areas every day. People's walking activities are accompanied by various activities such as conversation, rest, waiting, observation, reading, thinking, and learning. These activities provide interaction between students, and the street landscape provides a space for these activities. It also provides the most convenient interface for the dissemination of cultural confidence theory. After research, there are 9 types of landscape elements in the main streets of vocational colleges, corresponding to the promotion of cultural confidence theory. (Table 1)

Table 1 Campus Street Landscape Education Element Spectrum

Number	Element Category	Connotation	Culture Confidence Expression	Contact Frequency
1	Street paving	The color, texture, and textual expression of the pavement	The combination of pavement and text	centre
2	Promotion display board	Fixed billboards, temporary promotional banners	Direct expression through language and writing	high
3	Interface between buildings and structures	Street facades of buildings and structures	Text and graphic expression	centre
4	Campus skyline	Proportion of sky and buildings, etc	Architectural color, some text	centre
5	Street furniture	Seats, telephone booths, newsstands, indicator light boxes Public water dispensers, mailboxes, and roadside sculptures	Combination expression of text, patterns, colors, and interactive design	high
6	Animals and plants	Animal involvement in sound, plant morphology	Plant combination landscape	low
7	Pedestrians and Conversations	Pedestrian attire and conversation content	Dialogue content	low
8	colour	The overall color tone and large color blocks of the street	The color tones of traditional culture	high
9	other	Events happening on the street Effects such as car disturbances	The impact of civilized behavior	low

Constructing a campus landscape element spectrum and promoting cultural self-confidence elements have various positive impacts on the cultivation of cultural self-confidence among vocational college students. Firstly, to enhance intuitive perception and experience, vocational college students can intuitively feel the charm and profound

heritage of Chinese culture through landscape elements such as sculptures, murals, and stone carvings on campus. These elements not only beautify the campus environment, but also subtly instill cultural influence in students in their daily lives. the second is to enhance education and guidance. the cultural confidence elements integrated into the campus landscape element spectrum, such as historical figure statues, traditional cultural symbols, etc., can serve as carriers of knowledge transmission, allowing students to learn rich cultural knowledge while enjoying the beautiful scenery. Through the educational role of landscape elements, students can be guided to establish correct cultural and value systems, enhance their sense of cultural identity and pride. This kind of guidance is subtle and can deeply influence students' thoughts and behaviors. the third is to create a good environment for nurturing students: constructing a campus landscape full of cultural confidence elements can create a positive and uplifting cultural atmosphere, allowing students to be influenced and infected in this environment, thus more loving and cherishing their own culture, and further promoting students' comprehensive development.

ACKNOWLEDGEMENTS

This article is one of the phased achievements of the 2024 Shandong Province Education Development Research Micro Project "Research on the Propaganda Strategy of the Party's Cultural Confidence Theory in the Street Landscape of Vocational Colleges" (Project Number: FH010).This article is one of the phased achievements of the 2024 Shandong Province College Philosophy and Social Sciences Research Project "A Study on the Path of Integrating Nostalgia Landscape into the Yellow River National Cultural Park (Shandong Section) Based on the Emotional Identity of the 'Mother River'" (Project No.: 2024ZSMS360).

REFERENCE

[1] Street Environmental Landscape Design [M]. Lv Zhenghua and Ma Qing. Liaoning Science and Technology Press. 2000.

[2] Society of Civil Engineering. Road Landscape Design [M]. Zhang Junhua, Lu Wei, Lei Yun. China Architecture&Building Press. 2003.

[3] Building a socialist cultural power in the new era [M]. Zhang jiang. China Social Sciences Press. 2019.

[4] Chinese Cultural Confidence [M]. Li Jun, Zhao Yu fei. Kong Xue tang Bookstore. 2014.

Research Progress on Environmentally Friendly Ship Antifouling Coatings

Yuqing Guo, Minjie Shi, Hongzhen Li, Yuanyuan Qu*
Department of Materials and Chemical Engineering, Zibo Vocational Institute, Shandong Zibo 255314, China
*Corresponding Author.

Abstract: The contaminated organisms in the ocean are attached to the surface of the hull, causing the ship's navigation resistance to increase and fuel consumption, resulting in huge economic losses. With the enhancement of global awareness of marine ecological protection, the environmental problems brought about by traditional marine anti-fouling coatings containing toxic ingredients have attracted wide attention. In order to meet this challenge, the development of environmentally friendly anti-fouling coatings has become a research hotspot and is gradually becoming the mainstream trend of industry development. This article reviews the research progress of several environmentally friendly anti-fouling coatings and looks forward to their development prospects.

Keywords: Marine Anti-Fouling; Anti-Fouling Paint; Green Environmental Protection

1. INTRODUCTION

Ship anti-fouling coating is a special coating used by ships, but its application is not limited to the ship itself, but can also be widely used in docks, offshore drilling platforms and other marine facilities to resist the damage caused by seawater corrosion and marine life adhesion.

There are a large number of contaminated organisms in the ocean, such as large seaweed, vines and shells, which are attached to the bottom of the ship [1-2]. It will increase the ship's route resistance and fuel consumption and reduce the ship's speed, thus increasing greenhouse gas emissions. In addition, contaminated organisms will corrode the attached metal surface, interfere with the normal operation of ships and other marine equipment, reduce their service life, and may pose safety risks [3]. Studies conducted on hundreds of ships contaminated with marine life show that the growth of marine contaminated organisms on hulls and thrusters increases navigational resistance, resulting in a 5% reduction in the average speed of more than 80% of ships, and in the most serious cases, the speed reduction can be as high as 25%. Ships with a marine pollution rate of 5% will increase their fuel consumption by 10% accordingly [4]. Therefore, the development of efficient anti-fouling coatings is extremely important at the economic level.

The early prosperity of maritime trade was partly due to the emergence of self-polishing anti-fouling paints, especially products based on organic tin polymers. However, because organic tin is not easy to decompose in the ocean and will interfere with the endocrine of marine organisms, resulting in biological deformities and posing a major threat to marine ecology, since 2003, self-polishing anti-fouling paints containing organic tin have been banned worldwide [5]. Nowadays, ship coatings should not only have excellent protective performance, but also meet environmental protection requirements. Therefore, environmentally friendly anti-fouling paint was born.

2. WUXI SELF-POLISHING ANTI-FOULING PAINT

After organic tin self-polishing anti-fouling coatings were banned, people developed zinc, silicon and copper Wuxi self-polishing anti-fouling coatings with acrylate as the main chain [6]. the working principle of Wuxi self-polishing anti-fouling coating is to use substrates containing hydrophilic side chains to release the anti-fouling agent to the coating surface during the hydrolysis process, so as to achieve the anti-fouling effect. With the continuous washing of seawater, the

infiltration layer gradually peels off, exposing a new resin layer, so as to achieve the self-renewal and polishing effect of the coating [7]. For polymers that do not contain copper and tin, they do not have the ability to kill marine contaminated organisms as strongly as tin-containing self-polishing materials, so they need an enhanced copper-free Wuxi polymer anti-fouling agent. Shanghai Xinjianli New Materials Technology Co., Ltd. [8] has developed an environmentally friendly anti-fouling agent, namely N-(2, 4, 6)-trichlorophenyl (maleimide) and pyridine thio copper zinc. It is said that the coating prepared with this anti-fouling agent can effectively prevent the attachment and growth of marine organisms on ships and other marine facilities, has a significant inhibitory effect on the adhesion of marine organisms in the early and late stages, and has a wide range of inhibitory effects on a variety of marine organisms to achieve the goal of anti-pollution. However, there are also concerns that the degradation products of pyridine zinc in the marine environment may still have toxic risks.

3. LOW SURFACE ENERGY ANTI ANTI-FOULING COATINGS

Low-surface anti-fouling coating is to use the low surface of the anti-fouling coating to make it difficult for the staining organism to adhere to the surface of the material, so as to achieve the effect of anti-fouling. Its physical decontamination principle is expected to completely solve the environmental pollution problem of anti-fouling coatings, which is the key research and development direction of environmentally friendly anti-fouling coatings [9]. Silicone material is one of the low-surface contamination deattachable materials. the reason why it is common is that it has the characteristics of both organic and inorganic materials. the silicon-oxygen (Si-O) structure in its polymer main chain gives it special physical and chemical properties. Silicone materials have large bond angles and good molecular chain flexibility, and low elastic modulus. These characteristics make it meet many requirements of low surface energy coatings [10].

For those highly toxic anti-fouling agents, their main mechanism of action is to inhibit marine organisms, but with the release of toxic substances, their anti-fouling effect may gradually weaken. In contrast, low-surface energy anti-fouling coatings do not rely on releasing toxic substances to work, but prevent the adhesion of marine organisms by reducing surface energy. This kind of paint is usually composed of silicone, fluoride and other components, among which the surface energy of fluoride is the lowest. the study points out that when the $-(CH_2)_2-(CF_2)_n$ structure is introduced into the resin, the surface energy of the whole resin will be significantly reduced, even less than 6 mN/m. Although this low-surface energy coating can reduce the adhesion of marine organisms, it still needs to be cleaned regularly, because once marine organisms adhere and grow for a period of time, subsequent cleaning will become difficult [11].

4. BIONIC ANTI-FOULING PAINT

The use of natural substances with anti-fouling effects (natural biological anti-fouling agents) extracted from marine animals, plants and microorganisms is an important strategy for the preparation of non-toxic anti-fouling coatings [12].

Research on natural products extracted from marine organisms as anti-fouling agents has been widely carried out. It has been initially found that the anti-fouling mechanisms of these natural products are diverse and complex, involving a variety of mechanisms such as preventing adhesion, disrupting nerve conduction (including reversible paralysis and nerve signal interference) and repulsive effects, and different types of marine natural products have their own unique anti-fouling effects.

Nevertheless, the practical application of natural anti-fouling agents still faces some challenges. For example, their content is low in organisms, and the existing separation and purification techniques are immature, which makes large-scale acquisition difficult. In addition, the stability of natural anti-fouling agents is insufficient, and the long-term preservation problem has not been properly solved. In recent years, in order to improve the application potential and scope of natural anti-fouling agents, researchers have tried a variety of methods, including chemical modification of natural anti-fouling active ingredients,

adding functional groups with antibacterial function, or synthesizing artificial compounds with similar activity to natural anti-fouling agents [13].

5. LOW ORGANIC VOLATILE (VOC) ANTI-FOULING COATING

There are usually 3 ways to realize low VOC anti-fouling coatings: (1) water-based anti-fouling coatings; (2) powder anti-fouling coatings; (3) high-solid content anti-fouling coatings [14].

At present, the research and development of low-VOC anti-fouling coatings at home and abroad are only the results of water-based anti-fouling coatings. For example, the low-VOC high-performance anti-fouling coating developed by He Fangyue: fluoroethanol and methacrylate are e-e-echemical to form fluoroacrylate-containing monomers, and then fluoroacrylate, acrylic acid and hydroxyacrylate are induced by solution polymerization and ammonium persulfate to prepare acrylate polymers with hydroxyl groups. Add polyurethane prepolymer and catalyst tin caprylate to the emulsion to make a fluorine-containing polyurethane-acrylate emulsion. Add nano-TiO_2 filler to make high-performance anti-fouling paint.

Today, the main progress in the research and development of VOC anti-fouling coatings focuses on the field of water-based anti-fouling coatings. For example, the preparation process of low-VOC high-performance anti-fouling coating developed by He Fangyue includes the reaction of fluoroethanol and methacrylate to form fluoroacrylate monomers, and then the polymerization of fluoroacrylate, acrylic acid and hydroxyacrylate through solution polymerization to form hydroxyacrylate poly Combined object. Because the polymer is rich in carboxy groups (-COOH), it has a certain degree of water solubility and can be emulsified with fat alcohol polyoxyethylene ether, so that it is easy to prepare into an emulsion. Polyurethane prepolymer and tin cylate are further added to the emulsion as catalysts to prepare a fluorine-containing polyurethane-acrylate emulsion. Finally, by adding nano titanium dioxide (TiO_2) filler, a high-performance anti-fouling coating is finally obtained.

6. CONCLUSION

With the continuous progress of the marine economy and the enhancement of countries' awareness of marine ecological environment protection, the research and development of environmentally friendly anti-fouling coatings has been promoted, and the use of toxic anti-fouling coatings is expected to gradually withdraw from the historical stage. As a country with an ocean area of 3 million square kilometers, China's marine resources are crucial to the country's sustainable development strategy. Therefore, the research and development of environmentally friendly anti-fouling coatings is a strategic task with significant economic value and far-reaching social impact.

Marine biological pollution is one of the key issues that limit the development and utilization of marine resources. Therefore, the research and development of environmentally friendly anti-fouling coatings has become an inevitable development direction.

REFERENCE

[1] Shi Minqiu, Lin Qiao, Zhang Xin, Li Jun, Guo Zengli. Research and development trend of new anti-fouling coatings for ships [J]. Guangdong Chemical, 2010, 37(08):21-22+24.

[2] Chen Changchun, Xiang Lingyun, Liu Hanqi. the attachment and prevention of marine contaminated biological vines [J]. Marine Environmental Science, 2012, 31(04):621-624.

[3] Yunqing Gu, Lingzhi Yu, Jiegang Mou, Denghao Wu, Maosen Xu, Peijian Zhou, Yun Ren. Research Strategies to Develop Environmentally Friendly Marine Antifouling Coatings [J]. Marine Drugs, 2020, 18(7):

[4] Chambers L D, Stokes K R, Walsh F C, et al. Modern approaches to marine antifouling coatings [J]. Surface &Coatings Technology, 2006, 201(6):3642-3652.

[5] Wang Zehao, Cong Weiwei, Zhang Kai, Gui Taijiang Research and Development of Environmental Protection Strategies for Marine Anti fouling Coatings [J]. Material Review, 2022, 36 (S2):480-485.

[6] Guitai River the current situation and development trend of marine anti fouling coatings [J]. Modern Coatings and Painting, 2005, (05):28-29.

[7] Hu Chengying, Zhang Kai, Zhang Lu, Wang Xiaojun, Liu Shuhui, Gui Taijiang Research progress on self polishing anti fouling coatings in Wuxi [J]. China Coatings, 2024, 39(03):24-29.
[8] Shanghai Xinjianli New Material Technology Co., Ltd. A Wuxi, copper free environmentally friendly marine anti fouling coating, preparation method and application: CN, 106281020A [P]. January 4, 2017.
[9] Zhang Yun, Yang Song, Ai Yingchun, Jiang Songtao, Zhang Pan, Wang Yuxin the current situation and prospects of low surface energy anti fouling coatings for ships [J]. Comprehensive Corrosion Control, 2020, 34(07):42-45.
[10] Guan Yongxin, Zhou Qiang, Chen Liyi, Li Hui, Liu Xiaonan Research progress on organic silicon and organic fluorine low surface energy anti fouling coatings [J]. Chemical Progress, 2023, 42(10):5286-5298.
[11] Wang Xuezhen, Lu Guangming, Jiang Shan, Wan Yong Research progress on marine anti fouling coatings [J]. China Materials Progress, 2023, 42(05):431-440.
[12] Song Zhenwei, Wang Xiao, Liu Liyun, Pan Jie, Hou Peimin, Xu Yuanhao Research status and progress of environmentally friendly, non-toxic and anti fouling coatings [J]. Shanghai Coatings, 2015, 53(03):21-25.
[13] Gao Hong Research progress on the application of biomimetic coatings [J]. Electroplating and Finishing, 2023, 45(06):56-59.
[14] Chen Lijun, Zhang Xinya, Chen Huanqin Research progress on environmentally friendly anti fouling coatings [J]. Chemical New Materials, 2005, (07):43-46.

The Development and Innovation of Traditional Printmaking Art Under the Influence of Contemporary Art

Guo Yueyang
Zibo Vocational College, Shandong, China

Abstract: Printmaking is a special form of graphic art, after thousands of years, and China's printing technology development inseparable, inherits the culture and art, is an important artistic treasure in China. With the development of contemporary art, printmaking has entered a new stage of development, but it also encounters many obstacles. How to overcome the problems in the development of lithograph, innovate its art form and enhance its artistic value has become an important content of the development of printmaking in the new era. In the development of China's traditional printmaking art, the use of contemporary art for innovation can give a new life to national culture, and can explore a new way for its development. Based on this, the paper studies the content of traditional Chinese printmaking art, analyzes the influencing factors under the development of contemporary art forms, and points out the road of future development and innovation.

Keywords: Traditional Print Art; Contemporary Art; Development And Innovation; Cultural Inheritance

1. INTRODUCTION

The development of traditional printmaking art is closely related to the development of printing technology, including wood engraving and copper engraving, and has made important contributions to social and cultural development. However, China's traditional printmaking is mainly based on the reproduction of printmaking, and the creation of printmaking began to appear in modern times, and its artistic expression content has a new change. Under the background of contemporary art, the art of Chinese printmaking is related to the socialist culture with Chinese characteristics, showing new artistic characteristics and contributing important force to the cultural development of the motherland. the traditional printmaking art is the artistic treasure of China. the development and innovation of the traditional printmaking can give it the contemporary artistic flavor. Therefore, it is necessary to analyze the development and innovation of traditional printmaking under the influence of contemporary art.

2. THE CONTENT OF CHINESE TRADITIONAL PRINTMAKING ART

China's traditional printmaking is developed on the basis of engraving culture. the characteristic of traditional printmaking is to highlight the "wood taste", use the black method to artistic treatment of the work, so that it has artistic characteristics, and highlight the theme with the help of clever composition, and increase the artistic effect with Yang engraving [1]. Zheng Zhenduo once gave printmaking a high artistic evaluation, pointing out that its cultural promotion value should not be underestimated.

As early as the Yin and Shang dynasties, there were animal bone inscriptions, and there were many decorative patterns on the unearthed bronzes, which all had the shadow of the development of traditional printmaking. In the Tang Dynasty, China entered the peak period of politics, economy and culture, and the art of printmaking developed rapidly, which was closely related to the development of Buddhist culture. For example, the earliest engraving work "Diamond Sutra" is an important achievement of the development of printmaking art, and is now stored in the British Museum. Song Dynasty and Yuan Dynasty, China's block printing technology is becoming more and more mature, the technology is very exquisite, printing scale is

also larger, there are related works spread all over the world. Ming and Qing dynasties is the peak period of the development of block painting, because of the political, economic and cultural stability, block painting art is also constantly developing, this period of block painting works "Li SAO" "Shuihu leaf" are representative.

According to the materials used in engraving, traditional engraving can be divided into lithography, woodblock engraving, copper engraving and other types. Lithography originated in Germany and was introduced into China at the end of the 18th century. Lithography is mainly painted on metal skin, and the printed products are very exquisite. Woodcut in China has a long history of development, various forms of art, can be copied in large numbers, can be printed many times, has a certain social function, in today's social situation its function decline, but still has a special artistic charm. the main material of woodcut is boxwood, pear wood and other hard wood materials, and has higher requirements for knives. Now the synthetic board has been used to replace most of the wood print materials, saving the cost of print production. the application of woodblock prints is mainly in facade, New Year pictures, deities, marks, illustrations, paper horses and many other aspects. Copper engravings, also known as etchings, mainly originated in Europe, where works are made by etching metal plates with corrosive fluids.

Prints can be divided into various categories based on color, such as monochrome prints, monochrome prints, and black and white prints. Monochrome printmaking mainly refers to monochrome paper printmaking, which can be subdivided into letterpress, gravure and clipboard according to its artistic presentation form. the artistic presentation effect is similar to that of wood printmaking. Color printmaking, also known as color printmaking, uses a variety of colors to show the artistic content, and is favored by the masses because of its colorful. Color printmaking is different from the general painting color, in the process of color printing must maintain its printmaking characteristics, with the least color overprint the best effect. Black and white printmaking is relatively common, which refers to the printing of black paint to white objects in the form of printmaking.

According to the production method, printmaking can be divided into several types, such as intaglio, letterpress, computer plate and lithograph [2]. Intaglio painting refers to the use of concave lines on a plane to carve out a variety of art forms, the ink can be rolled on, printed to present artistic effects. Intaglio engraving methods mainly include dry engraving method, merotine, corrosion method and so on. the relief plate is the opposite of the intaglio plate. the blank part is removed by the way of knife engraving, and the artistic image is left. Lithography is mainly represented by lithography, which uses the principle of mutual exclusion of oil and water for lithography. Computer lithograph is one of the most special types, and is also an important embodiment of contemporary art. In computer printmaking using digital technology to draw printmaking, also known as computer printmaking, but at present there are more controversial views on computer printmaking, but many printmaking exhibitions have accepted the type of computer printmaking.

3. THE INFLUENTIAL FACTORS OF THE DEVELOPMENT OF TRADITIONAL CHINESE PRINTMAKING ART

The development of traditional Chinese printmaking art has a long history, far earlier than that of the West. But with the decline of modern national fortunes, the art of printmaking has also entered a state of stagnation and even a crisis of extinction. With the continuous development of China's revolutionary movement, printmaking art ushered in a new life with the awakening of Chinese revolutionary consciousness [3]. Mr. Lu Xun made an important contribution to the development of Chinese printmaking, bringing foreign printmaking art into China, inspiring the development of Chinese printmaking art, and promoting the new "Development of Woodcut art" [4]. With the development of socialism, the development of Chinese culture and art was also deeply influenced by socialist values, which closely linked the art of printmaking with socialist core values.

China's printmaking is mainly based on woodblock engraving, which basically follows the ancient method in plate material and technology, and develops relatively slowly. Although the western printmaking appeared later, in the 15th century successively invented copper printmaking and lithography, and their printmaking techniques are also quite different. With the introduction of foreign printmaking art, China's traditional printmaking began to decline and did not absorb the new art forms to innovate [5]. Under the situation of contemporary art, blindly imitating the ancients may limit the development of printmaking, but overemphasizing the Westernization of printmaking will also lose national characteristics. Therefore, to develop printmaking in the context of contemporary art, innovation and tradition must be combined, so as to be unique without losing the cultural characteristics of the nation.

4. THE FUTURE DEVELOPMENT AND INNOVATION OF TRADITIONAL PRINTMAKING ART UNDER THE INFLUENCE OF CONTEMPORARY ART

The future development of printmaking has the advantage of profound cultural deposits, but limited by market factors, its art form is relatively backward and does not meet the aesthetic needs of today's society. Therefore, under the new situation of art development, the development of printmaking art must integrate new innovative technologies to open up the printmaking market, so that printmaking can go deep into the masses again and give play to its artistic value.

Needless to say, China's traditional printmaking art is mature and has cultural advantages, but the western printmaking culture also has a lot of innovation and unique printmaking art, especially in copper printmaking and lithography [6]. Therefore, the inheritors of printmaking art should open up their thinking, integrate Chinese traditional printmaking with western printmaking, and promote its development through artistic form innovation. In the process of integration between China and the West, print art creators should have a clear cultural pertinence, determine the cultural basis, and maintain a high degree of open thinking in the creation process, so as to reasonably introduce western printmaking techniques and deepen the integration of Chinese and Western printmaking, rather than losing cultural roots and blindly courting Western aesthetic concepts.

The development of printmaking is closely related to historical development, and the scope of printmaking has been expanding in the course of historical development, which also has different requirements for the quality of printmaking. To develop traditional printmaking under the background of contemporary art, we should not just hold on to the past, but continue the spirit of traditional culture and use contemporary art to develop printmaking. Especially in the 21st century, the ideology of printmaking should have a new exploration and break through the set art category. For example, after the emergence of computer printmaking, it was opposed by many printmaking artists, who believed that it lost the artistic characteristics of printmaking, simplified and informationized the art of printmaking, and lost the traditional taste of printmaking. the development of printmaking is directly related to the printing technology. Why does the engraving form under the new printing technology not belong to one of the printmaking forms? In addition, printmaking is closely related to people's life. If printmaking is separated from people's life, its vitality of artistic development will gradually shrink. Therefore, in the development process of printmaking, new artistic concepts should be adhered to in order to innovate and develop continuously.

5. CONCLUSION

Printmaking has been closely connected with Chinese culture in the millennium development, and has a unique style among many art forms. It is an important intangible cultural heritage in China. Once it disappears, it will cause irreversible cultural loss. In the context of the development of contemporary art, the art of printmaking can not only develop in the ivory tower, but should be re-recognized by the public to have new development vitality. In addition, colleges and universities in the development of printmaking art should strengthen personnel

training and expand their influence in the industry, so as to provide a steady stream of talents and development market for the development of printmaking. In the process of printmaking, it is necessary to adhere to innovation and development, integrate various cultures, enrich the content of printmaking, and enhance the expression tension of printmaking, so as to make it enduring under the background of contemporary art development.

REFERENCES

[1] Jiang Tianxi, Zhang Ruixia. the Torch Passed down · Brave undertaking Mission: Oral narration
Development of printmaking specialty in Guangxi University of the Arts [J]. Fine Arts, 2020.7

[2] ZHU Yanbing. Analysis of production technology requirements and development trend of paper for Copper printmaking art [J]. Paper Science and Technology, 2019

[3] LI Xin. Analysis on the Public Relationship of the Development of Chinese contemporary printmaking Art [J]. Art Review, 2020.1

[4] Zhang Dongdong. On the Development and Innovation of contemporary printmaking art [J]. Beauty and Times (Junten-day Issue) · Journal of Fine Arts, 2018.11

[5] DING Yi. Analysis on the Development of Watermark printmaking in the Context of Contemporary art [J]. Grain in Ear, 2018.5

[6] Huang Rongbo. the artistic characteristics and Development Status of Songxi Printmaking [J]. Shandong Youth, 2018.2

Research and Practice of Classroom Teaching Reform of "Building Construction Technology" in the Context of Informatization

Jin Han
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: With the rapid advancement of technology and the escalating demand for highly skilled talents in the construction industry, the traditional classroom teaching model for construction technology has become inadequate to meet the evolving needs of the industry. To cultivate more construction technology professionals who possess both theoretical knowledge and practical skills, classroom reform is imperative. This article aims to explore the practical content of classroom reform in construction technology education, with the hope of providing references for enhancing teaching quality and promoting comprehensive student development.

Keywords: Classroom Teaching Reform; Informatization; Issues; Content

1. INTRODUCTION

The level of informatization in the construction industry is gradually improving, but the traditional teaching of "Construction Technology" still remains in the classroom as the main teaching venue, and PPT playback is the main teaching method. When learning some commonly used construction techniques in the course, the teacher will play videos or animations of construction processes, or short films of construction methods and techniques, to assist students in understanding. However, simply playing short videos to understand construction techniques and methods is too monotonous, and students can only further understand the principles and methods of the construction by learning theoretical knowledge from textbooks with the assistance of watching videos. They cannot grasp the corresponding operating methods and related skills on the spot. Therefore, classroom teaching methods urgently need to be reformed.

2. ANALYSIS OF THE CURRENT SITUATION OF CONSTRUCTION TECHNOLOGY CLASSROOM

2.1 The disconnect between theory and practice

The traditional teaching mode often emphasizes theoretical teaching, resulting in students lacking practical experience and difficulty in applying the knowledge they have learned to practical work.

2.2 Single teaching method

The teaching method mainly based on lectures neglects the subjectivity of students, lacks interactivity and fun, and affects learning enthusiasm.

2.3 Inadequate evaluation system

The evaluation system often focuses on the assessment of theoretical knowledge, neglecting the evaluation of students' practical and innovative abilities.

2.4 Limited teaching resources

The limited resources of physical teaching materials, simulation equipment, and practical bases limit the depth and breadth of practical teaching.

3. THE MAIN PROBLEMS TO BE SOLVED IN THE REFORM OF CLASSROOM TEACHING OF CONSTRUCTION TECHNOLOGY

3.1 Solving the problem of monotonous classroom teaching methods

With the development of social economy and information technology, the construction industry is also moving towards the direction

of building industrialization, intelligence, digitization, and full life cycle. the monotonous teaching format makes it difficult for students to master the construction operation methods and related skills well. Classroom teaching should follow the trend of information technology development in the construction industry, use diversified information technology methods to break through the barriers of insufficient visual and intuitive classroom teaching, and create efficient classrooms. At the same time, it is necessary to incorporate on-site teaching into the teaching process to help students establish awareness of construction sites and visually experience job requirements. This is essential for their learning of construction technology courses.

3.2 Addressing the issue of outdated classroom teaching content

The basic characteristics of the concept of "new ideas, new requirements, and new approaches" proposed by the new engineering discipline are that the reform of construction technology course content should conform to the development needs of the new engineering discipline, timely supplement the teaching content of new processes, new technologies, new materials, and new equipment in combination with the needs of on-site construction positions, and improve students' sense of achievement in learning.

4. CONTENT OF CLASSROOM TEACHING REFORM

4.1 Reform of Teaching Content

4.1.1 Deepen school enterprise cooperation and timely expand the content of "four new" technologies

Strengthen teaching cooperation with construction enterprises, introduce advanced concepts of on-site construction, expand "four new" technologies, and optimize teaching content. Synchronize with the development of on-site construction technology, reform the teaching content system, including a teaching outline that conforms to the school's positioning and talent cultivation goals, rich and advanced excellent textbooks and teaching guides, a three-dimensional teaching reference network resource system that is compatible with high-quality online courses, and modern educational ideas and concepts that encourage students' individual development. Due to the rapid development and updating of course content, new technologies for solving special problems, new processes for different situations, and new materials that meet usage needs are constantly emerging in the process of engineering construction. Corresponding national and local standards and specifications are also constantly being updated and improved. On the basis of retaining the current commonly used construction techniques and technologies, some traditional and outdated construction methods that are no longer in use should be removed. At the same time, reference should be made to online resources and practical knowledge to add some construction methods and technologies that are currently frequently used and relatively mature, in order to adapt to the rapid updating and development of technology [1].

4.1.2 Using the "1+x" certificate as a lever to achieve the integration of job, course, competition, and certification

The teaching team closely follows the development trend of the construction industry in recent years, analyzes the typical work tasks in the professional job positions carried by the "Construction Technology" course, decomposes the typical work tasks, identifies the knowledge and skill requirements for completing the typical work tasks, breaks down and reorganizes them according to knowledge and ability points, and integrates them into the course teaching content to achieve the connection between professional courses and vocational positions. The "1+X" certificate system is an important supporting system for vocational education as a type of education, a carrier of industry education integration and school enterprise cooperation, and an important channel for cultivating compound technical and skilled talents. the scope of the "1+X" Construction Engineering Construction Technology Implementation and Management Vocational Skills Intermediate Certificate exam covers typical work tasks in the professional job positions carried by the "Construction Technology" course. the knowledge and skill points of the exam are integrated into the teaching content to promote learning and enhance students' learning goals.

On the basis of the "1+X" certificate, the the Belt and Road and BRICS Skills Development and Technological Innovation Competition was added this year. This competition is effectively aligned with the construction technology course, promoting learning through competition and effectively advancing the reform of teaching content.

4.2 Reform of Information Technology Teaching Methods

4.2.1Collaborative sharing of information on "smart construction sites"

The "Smart Construction Site" aims to integrate cutting-edge technology with the construction process to ensure effective communication of various management information and meet the control needs for the entire process management and all-round control of construction projects. Utilizing the "Smart Construction Site" system to collaboratively share construction site operation information into teaching classrooms, students can intuitively experience the on-site construction atmosphere, generate visual impact effects, and better understand the construction process by combining on-site practices. At the same time, fully tap into students' subjective initiative, search for the connection and difference between on-site construction technology and classroom content, and improve students' ability to analyze and solve problems.

4.2.2 Virtual Reality (VR) Technology

Against the backdrop of highly simulated 3D models of construction projects, utilizing VR interactive experiences, we aim to create an immersive cognitive environment for students to learn and apply safety management knowledge on construction sites. This will enhance the "spatial education power" and "sense of learning place" and stimulate students to engage in meaningful knowledge and skill learning, continuously improving the quality of vocational education [2].

4.2.3 Virtual simulation technology

The reform of the teaching method for the course "Construction Technology" requires project-based teaching throughout the course design. When introducing a new construction technology, a project is taken as an example to clarify project tasks, develop plans, implement plans, inspect and evaluate, and archive, following these five stages in an orderly manner. After the reform, project-based teaching was adopted in the curriculum, with each task being based on the application of construction technology and techniques, and the actual work content on the construction site as the goal. the knowledge, skills, and qualities learned in the textbook were used to solve various problems encountered on the actual construction site and during the construction process [3].

The virtual simulation system provides technical support for the achievement of teaching reform goals. It can simulate construction processes that are difficult to understand. During the operation process, students feel as if they are entering the construction work environment, immersing themselves in the knowledge of construction processes, improving their three-dimensional understanding of construction processes, and providing students with personal experience of future job positions, thereby promoting the improvement of teaching quality.

5. CONCLUSION

To achieve good results in the reform of classroom teaching of construction technology, it is necessary to regularly organize teachers to participate in professional teacher training to enhance their practical and innovative teaching abilities. To ensure the smooth implementation of reform measures, it is necessary to seek funding support from various channels such as government subsidies and corporate sponsorships. Actively seek policy support from education departments and relevant industry associations to create a favorable external environment for teaching reform.

The reform of the construction technology classroom is a systematic project that requires the joint efforts of educational institutions, enterprises, governments, and other parties. By constructing a "production education integration" teaching model, implementing project-based teaching, adopting diversified teaching methods, establishing a comprehensive evaluation system, and optimizing the allocation of teaching resources, the quality of training for construction technology talents can be effectively improved, providing solid talent

support for the sustainable development of the construction industry. In the future, with the continuous advancement of technology and innovation of educational concepts, the reform practice of construction technology classrooms will move towards a higher level, providing society with more high-quality technical and skilled talents.

REFERENCES

[1] Sang Qian Research on Teaching Reform of Construction Technology Course in Higher Vocational and Technical Colleges [J]. Career Space, 2010, 08:50-51

[2] Zhang Lianzhong, Zhang Qing Exploration into the Informationization Reform of the Course "Construction Technology" in Higher Vocational and Technical Colleges [J]. mountain
Eastern Social Sciences, 2015, S1:108-110

[3] Li Juntao, Li Keyuan Preliminary Exploration of Teaching Reform in the Course of "Construction Technology" in Higher Vocational and Technical Colleges [J]. National Business Situation (Theoretical Research), 2012, 06:72-74

Exploration of Civics and Politics in Higher Vocational Chinese Medicine Preparation Technology Course--Taking “Pills” as an example

Jinfang Hu
Zibo Vocational College, Shandong, China

Abstract: This paper mainly discusses how to integrate the ideological and political education elements into the higher vocational Chinese medicine preparation technology course with the center of “establishing morality and educating people” to accomplish the goal of cultivating both moral and talented, artisanal and high-quality technical and skilled talents, and to this end, this paper tries to integrate the ideological and political elements into the pill chapter of the Chinese medicine preparation technology course to make explorations for the reform of the ideological and political aspects of the Chinese medicine preparation technology course. This paper tries to integrate the Civics and Politics elements into the chapter of pills of Chinese medicine preparation technology course, so as to make exploration for the Civics and Politics reform of Chinese medicine preparation technology course.

Keywords: Chinese Medicine Preparation Technology; Civic-mindedness in the Curriculum; Pills

1. INTRODUCTION

At the National Conference on Ideological and Political Work in Colleges and Universities in 2016, General Secretary Xi Jinping spoke that all kinds of courses should make full use of the main channel of classroom teaching, and through the same direction and synergy with the ideological and political theory courses, promote the cultivation of student [1] s. How to effectively integrate the Civic and Political Education into the teaching of different specialized courses has become a major issue that needs to be solved urgently in the ideological and political work of college students. For colleges and universities, it is not only necessary to vigorously promote the reform and innovation of the ideological and political courses, but also necessary to activate the students' subjective initiative at the same time, dig deep into the resources of ideological and political education, and really run the ideological and political education through the whole process of teaching and learning in colleges and universities, and deepen the concept of “cultivating morality and nurturing humanity”in the process of talent cultivation, with the goal of cultivating both virtuous and talented talents, and craftsmen-type talents [2]. The course of Chinese medicine preparation technology is the core and backbone course of Chinese medicine specialty, and it is the main position for Chinese medicine specialty to carry out the course ideology, so it is very necessary to deeply excavate the ideology elements contained in the course, and pay attention to shaping and cultivating the students' due moral qualities and professional qualities. Here, this paper takes the chapter of“Pills”as an example to explore the specific measures of integrating the Civic-Political thinking into this course [3].

“Chinese medicine pills”refers to spherical or spherical-like solid preparations made of Chinese medicine tablets or extracts with suitable excipients. Pills belong to the solid preparations in Chinese medicine preparation, and there are many kinds of pills, such as traditional honey pills, water pills, etc., as well as modern pills and drops, etc. the traditional teaching methods do not pay enough attention to the shaping of students' moral character and the cultivation of their professionalism, therefore, it is necessary to dig deeper into the

Civics and Politics elements contained in the course and apply them to the teaching of this course. This paper mainly focuses on three aspects: analysis of learning situation, teaching objectives and contents, and teaching methods of integrating Civic-Political elements into the chapter of pills.

2. ANALYSIS OF LEARNING SITUATION

The teaching object of this course is for the second-year students of senior Chinese medicine, who have completed the study of anatomy, physiology, inorganic chemistry, organic chemistry, analytical chemistry, etc., and have a comprehensive understanding of the structure and function of the human body's various tissues and organs, with a relatively solid foundation in medicine and a solid foundation in chemistry, and have completed the specialized courses in traditional Chinese medicine, such as traditional Chinese medicine, traditional Chinese medicine, traditional Chinese medicine and pharmacy, chemistry, They have completed the specialized courses in Chinese medicine, such as Chinese herbal medicine, Chinese medicine chemistry, Chinese medicine pharmacology, Chinese medicine prescription and proprietary Chinese medicine, etc., and have the knowledge base to complete the course of Chinese medicine preparation technology.

3. CONTENT AND OBJECTIVES OF TEACHING

Pills chapter of the teaching content and teaching objectives is to enable students to master the concept of pills, characteristics, classification, preparation methods and quality requirements, master the plastic method, pan system, drop system and other methods of preparation, basic theory and skills, in accordance with the provisions of the process and technical points, the use of appropriate methods for the preparation of qualified pills. Through the study of this chapter, help students to firmly establish the concept of pill quality safety, stability, effectiveness, controllable, and cultivate the ability of students to link theory with practice, students are required to do practical work of pharmaceutical people.

4. TEACHING METHODS FOR INTEGRATING CIVIC AND POLITICAL ELEMENTS INTO PILL CHAPTERS

This chapter focuses on the exploration of course ideology from the history of the development of the traditional dosage form of Chinese medicine pills as well as the in-depth excavation of the ideological elements in the teaching content of pills.

4.1 Establishing socialist core values of patriotism and dedication

The socialist core values include the national level, the social level, and the level of individual citizens. Students will be led to review the development and breakthrough innovations of Chinese medicine pills since the founding of New China and the important role they have played in clinical treatment. Students will learn the characteristics of pills so that they can understand the importance of dosage forms and the contribution that a pharmacist should make to the cause of people's life and health. By comparing new pills (e. g., dropping pills, etc.) and traditional pills (e. g., water pills, honey pills, etc.), students are motivated to carry on the tradition of innovation, develop new products with Chinese medicine characteristics, and lay a solid foundation for the future of China's traditional Chinese medicine; at the same time, they are reminded to bear in mind the historical mission and set up the socialist core values of patriotism and dedication [4].

4.2 Spreading the culture of Chinese medicine and cultivating students' cultural self-confidence

Fully explore the values of cultural outlook and outlook on life in the chapter of pills, and integrate the concept of Civics and Politics into the teaching. Pills are one of the classic traditional Chinese dosage forms. Teachers, while teaching theoretical knowledge, fully inculcate the content of ideological and political education, strengthen the infiltration of traditional Chinese medicine culture, and shape a solid cultural and professional self-confidence for students. For example, take the teaching of honey pills as an example, the preparation process of traditional honey pills is crushing herbs, refining honey, making pills, making pills, splitting pills, rounding pills, packing pills, etc., and it is slightly boring and tedious just to teach these preparatory links,

but through the active combination of Civic and political elements of the teaching design, with the familiar "Angong Niuhuang Pills" as a classic case By actively carrying out the teaching design with Civics elements, and using the familiar "An Gong Niu Huang Pills" as a classic case, students are guided to think about the principles of its composition, the principles and basis of the dosage form design, and at the same time combining the pictures and videos to summarize the advantages and disadvantages of the traditional method of ancient people's production and the modernization of the honey pill production method, allowing students to have a clearer understanding of the preparation process and characteristics, deepening the understanding of the students of the traditional traditional Chinese medicine preparations, and strengthening the confidence of its medical culture, and also letting the students understand that the fusion of modern science and technology with the traditional techniques will make the big honey pills and other It also makes students understand that the integration of modern science and technology with traditional technology will make some traditional dosage forms such as big honey pills continue to flourish. By mining the elements of politics and ideology from traditional Chinese medicinal preparations and fully mobilizing students' learning enthusiasm, we can not only deepen students' understanding of theoretical knowledge, but also achieve the purpose of teaching and educating people [5].

4.3 Strengthening labor education and promoting the spirit of national craftsmanship

Taking labor education and craftsmanship as the entry point of course ideology, it has a subtle influence on students' thoughts and behaviors, and promotes students to improve their enthusiasm for learning, set up a correct learning attitude, and enhance their self-confidence and pride in this profession. In the experimental class, students are instructed to prepare pills by the pan-production method, so that they will know that the preparation of each small pill needs to go through many procedures, and each step of adding powder needs to be perfect, so as to cultivate the students' rigorous attitude towards pharmacy. After the completion of the experiment, students are led to clean up the laboratory to develop good laboratory habits, which is also an important part of strengthening their labor education and helps to cultivate them to become a qualified pharmaceutical man.

4.4 Fostering Creative Thinking in Students

Innovation is the key to develop the cause of Chinese medicine, and it is also the necessary way for our Chinese medicine to go to the world. In order to cultivate students' innovation ability, we need to teach students according to their abilities and adopt teaching methods suitable for them. In the teaching process of pills, we should not only pay attention to the characteristics of its traditional dosage form, but also explore and innovate, combine the traditional theories with modern technology to further cultivate students' innovative thinking. Such as honey pills in the preparation process need to use honey as a binder, on the one hand, can be bonded to the powder of traditional Chinese medicine, to control the release of active ingredients, on the other hand, it can also play and in the slow and urgent, tonic and pain relief effect. Water pill binder can choose wine, vinegar, medicine juice, etc., not only can induce viscosity in the powder of traditional Chinese medicine, but also increase the solubility of some of the active ingredients; in addition to play the cited medicine to the meridian, correct the taste and odor of the efficacy of the modern theory of preparations and traditional dosage theory of the integration of the integration and innovation, prompting our students, the Chinese pharmaceutical preparations in the selection of excipients, unlike Western pharmaceuticals, need to play the "medicine and supplementation in one". It suggests to our students that when choosing excipients for Chinese medicine preparation, it is different from western medicine, and they need to play the characteristics of "medicine and auxiliary in one", which exercises their thinking of Chinese medicine.

5. CONCLUSION

Higher vocational education of Chinese medicine preparation technology should adhere to the "moral education", and reasonably coordinate the thinking of Chinese medicine and modern scientific thinking.

Teachers should fully explore the elements of ideology and politics according to the characteristics of the curriculum in the course of teaching, and integrate the ideology and politics education into the teaching of professional courses, and through the teaching of knowledge of the professional courses, the inculcation of the culture of Chinese medicine, experience of labor education, cultivation of innovative thinking, and establishment of socialist core values, so as to cultivate compound technical and skillful talents adapted to the development of contemporary Chinese medicine career.

REFERENCES

[1] Xi Jinping. Xi Jinping emphasized at the national conference on ideological and political work in colleges and universities: the ideological and political work through the whole process of education and teaching to create a new situation for the development of China's higher education industry [N]. People's daily, 2016-12-09(1).

[2] Wang Xu. On the Relationship between Cultural Confidence and Connotative Development of Chinese Medicine Higher Education [J]. Chinese Medicine Education, 2019, 38(1):9-12.

[3] Yan Hong. Survey and Analysis of Talent Cultivation and Teaching Reform of Chinese Pharmacy Specialties [J]. Northwest Medical Education, 2016, 24(4):600-603.

[4] Huang Xinyi. Exploring the Origin and Application of Chinese Medicine Pills [J]. Clinical Journal of Chinese Medicine, 2018, 30(10):1823-1826.

[5] Yu Haiyan. Progress of Research on Chinese Medicine Pills [J]. Pharmaceutical Research, 2019, 38(7):424-426, 430.

Practice and Thinking on Improving the Quality and Efficiency of Special Supervision in Higher Vocational Institutes

Shuli Jing
Zibo Vocational Institute, Zibo, Shandong, 255300, China

Abstract: Special supervision is an effective means for discipline inspection and supervision organs to deepen political supervision and promote the implementation of work. However, at present, there are still problems in the special supervision carried out by higher vocational Institutes, such as the lack of accurate grasp of supervision priorities, the lack of ability to find problems, and the lack of implementation of rectification.
Keywords: Higher Vocational Institutes, Special Supervision, Quality And Efficiency

1. INTRODUCTION

Special supervision is an effective starting point for discipline inspection and supervision organs to deepen political supervision, promote the implementation of Party committees' decision-making and deployment and central tasks, and continuously improve the effectiveness of supervision. In order to give full play to the role of "supervising and guaranteeing the implementation and promoting the improvement of development", the discipline inspection and supervision institutions of higher vocational Institutes should resolutely implement the supervision responsibility of comprehensively and strictly governing the party, carry out special supervision and inspection around the deployment arrangements of the higher authorities and the key work of the school, actively explore and practice the content, methods and working mechanisms of special supervision, summarize the experience of supervision, improve the shortcomings, and continuously improve the effectiveness of supervision.

2. SPECIAL SUPERVISION PRACTICES

2.1 Comprehensively analyze and judge, and clarify the focus of supervision

Closely focusing on the decision-making and deployment of the Party Central Committee and the work arrangements of the provincial and municipal party committees, combined with the key work of the school, systematically sort out the key tasks, comprehensively analyze the school's petition reports, problem clues, case investigation and handling, integrity risk investigation, inspection and audit feedback and other aspects, determine the focus of supervision, form a supervision list, and carry out supervision and supervision in a planned manner.

2.2 Focus on key links and strengthen supervision and inspection

According to the special supervision task, conscientiously collect relevant information, study the spirit of the relevant documents, on the basis of accurately grasping the policies and regulations of the higher authorities and work requirements, combined with the actual work of the school, refine and sort out the supervision content, formulate a special supervision plan, focus on promoting the implementation of the school's key work, safeguard the interests of teachers and students, and strengthen supervision and inspection by focusing on key links.

2.3 Highlight pressure conduction and adhere to compaction responsibility

It is not only based on the re-supervision of supervision, but also insists on front-line supervision and whole-process supervision, and also insists on compacting responsibilities and promoting rectification. Through feedback to the party committee of the school, sending reminder letters to relevant departments and faculties, formulating and issuing discipline inspection and supervision opinions, etc., urge and promote the party organizations of relevant departments and

faculties to strengthen their responsibility, strictly implement the main responsibility of comprehensively and strictly governing the party, earnestly rectify problems, and jointly promote the high-quality development of the school.

3. THE EXISTING PROBLEMS

3.1 The tangible and effective coverage of supervision needs to be further improved

First, the grasp of special supervision is not accurate enough. the overall situation of the school is not systematic and comprehensive, there is a lack of overall planning for the normalization of special supervision of key areas and important tasks of the school, the special supervision carried out is too little, the focus of supervision, the content of supervision and the implementation of measures are not accurate enough, and the experience and practices and problems are not analyzed and summarized enough after the supervision is completed. Second, the coverage of supervision is not extensive enough. the school has a wide range of work points such as managing the party, running the school, personnel training, and team building, and there are many objects and matters of supervision. However, at present, most school discipline inspection and supervision organs have a small number of on-the-job personnel, and their supervisory and discipline-enforcing forces are insufficient; in the course of carrying out special supervision, they can often only supervise some departments and faculties, and the coverage is on the small side, which restricts the effectiveness of supervision. Third, the sense of active supervision is not strong. School discipline inspection and supervision institutions are the work departments of the party committee, and in their daily work, the objects of supervision are their own leaders or colleagues, and they do not see each other when they look up, and they are affected by the "society of acquaintances", and some cadres lack the fighting spirit, and there is a certain fear of difficulties and a certain degree of withdrawal in the process of supervision, and there are situations such as not being able to analyze problems, not wanting to discover problems, and not discovering, handling, and correcting problems that are symptomatic and tendentious.

3.2 Insufficient ability to supervise and discover problems

First, the ability and quality of discipline inspection cadres are insufficient. Key areas such as bidding, admissions, logistics, infrastructure and finance involve a lot of professional knowledge and complex processes, and supervision requires corresponding professional knowledge and ability. However, at present, most of the discipline inspection and supervision cadres in schools are transferred from other administrative departments and faculties, and their professional knowledge reserves are insufficient, their practical training in supervision and discipline enforcement is insufficient, their grasp of supervision methods and methods is not solid enough, the foundation for discipline enforcement and law enforcement is weak, and there are few deep-seated problems found in supervision and inspection, which affects the quality of supervision. Second, all kinds of supervision are not coordinated and linked, and the integration is insufficient. the collaborative supervision mechanism is not sound and perfect, the communication and consultation, information exchange, achievement sharing, and joint supervision between the school discipline inspection and supervision institutions and various supervision subjects such as auditing and finance are not smooth enough, and the professional supervision advantages of relevant functional departments are not sufficient, and the joint force of supervision has not yet been formed. Third, there is a single mode of supervision. At present, the special supervision is still based on traditional methods such as consulting materials, discussion reports, and on-site supervision, and using informatization, intelligence, big data analysis and other means to carry out innovative work and dig deep into problems.

3.3 Promote and supervise the discovery of problems and rectification of shortcomings

First, the closed-loop supervision mechanism is not perfect. the closed-loop supervision mechanism of "supervision and inspection-notification feedback-supervision and rectification-audit of sales number" is not detailed and perfect, and the implementation

of the rectification of the problem is not good enough to strongly promote the leaders in charge and relevant departments to jointly grasp the rectification of the problem. Second, there is a lack of tracking and scheduling. the supervision found that the working mechanism for tracking and scheduling and supervising rectification of problems was not sound enough, and the regular scheduling of rectification and improvement was strengthened, and the cancellation of accounts one by one was not in place, and the supervision and urging of perfunctory rectification and other problems was insufficient. Third, there are shortcomings in discipline and accountability. There are still concerns about promoting the rectification of problems found in supervision and the handling of problems of relevant responsible persons and responsible units, which has affected the effectiveness of rectification to a certain extent.

4. IMPROVEMENT MEASURES

4.1 Further strengthen overall planning and improve the accuracy of supervision

The first is to study and formulate a supervision plan. Strengthen the political attributes of special supervision, understand and grasp key areas such as enrollment, logistics, finance, infrastructure and the school's annual key tasks, combine the situation and problems found in daily supervision, strengthen analysis and judgment, select the entry point and focus point of supervision, formulate special supervision plans, carry out targeted special supervision, and effectively ensure the implementation of key tasks. Second, it is necessary to gradually expand the coverage of supervision. Select and strengthen the team of discipline inspection and supervision cadres, combine the actual situation of discipline inspection and supervision work, take into account the quality and quantity of special supervision, increase the supervision of relevant functional departments and faculties, and further enhance the role of special supervision. the third is to strengthen ideological refining. In-depth study of theoretical knowledge, education and guidance of discipline inspection and supervision cadres to improve their political position, improve the cultivation of party spirit, enhance the spirit of struggle, and strengthen responsibility. Fourth, strengthen summary and improvement. After the completion of the special supervision, review and summarize in a timely manner, solidify the experience and practices, analyze the deficiencies of the problem, and continuously improve the quality and efficiency of supervision.

4.2 Further improve ability and quality, and enhance the effectiveness of supervision

The first is to strengthen professional training. Actively arrange cadres to participate in professional training, carry out on-campus business training and seminars and exchanges around supervision work, and deepen their understanding and grasp of the key points of supervision. Strengthen the study of business knowledge in key areas such as financial audit and infrastructure, continuously broaden the scope of knowledge, and continuously improve the professional and theoretical level of discipline inspection and supervision cadres. the second is to strengthen practical training. Strengthen the experience of supervision and inspection, and continuously enhance the ability to supervise and enforce discipline. Supervise and urge discipline inspection and supervision cadres to learn by doing, to work in the course of learning, to grow through experience in actual supervision, and to continuously improve the level of supervision and ability to discover deep-seated problems. Innovate the model of "passing on the help and leading", give full play to the complementary advantages of the combination of the old, the middle and the young in terms of knowledge, experience, energy, etc., strengthen the all-round training and training of young cadres, and help young cadres continuously improve their ability to supervise and enforce discipline. the third is to form a joint force of supervision. Improve the coordination and linkage working mechanism of all types of supervision, deepen communication and consultation and information sharing with auditing, finance and other departments in special supervision, and effectively enhance the ability of supervision to discover deep-seated problems. Fourth, innovate supervision methods. Combined with various information management platforms, strengthen the use of information means such as data analysis and

comparison, and turn special supervision matters into information and data, change human supervision into data supervision, and change post-event supervision into process supervision, strengthen supervision and restraint on the operation of power, and effectively give full play to the effectiveness of special supervision.

4.3 Further strengthen the implementation of rectification and reform, and do a good job in the "second half of the article" of special supervision

The first is to establish a closed loop of supervision. Establish the systematic concept of special supervision, further improve and improve the supervision mechanism of the whole process before, during and after the event, flexibly use the system of reminder letters, problem supervision and supervision sheets, discipline inspection and supervision suggestions, etc., to promote the joint efforts of the leaders in charge and the responsible departments, promote the source of governance, strengthen feedback on the progress of rectification, and ensure that the problems found in supervision are resolved in place. the second is to strengthen tracking and scheduling. Further improve and improve the supervision mechanism, build a special supervision and rectification account, arrange special personnel to strengthen process management and regular scheduling, carry out rectification and reform in a timely manner, and improve the quality of rectification. the third is to promote both the symptoms and the root causes. Combined with the problems found in special supervision, analyze the common problems, management loopholes, and institutional and institutional obstacles existing in related work, supervise and improve mechanisms, improve systems, and achieve the effect of carrying out a supervision and governance in one area. Fourth, strictly enforce discipline and accountability. Problems such as slow implementation of higher-level decisions and deployments and ineffective measures discovered in special supervision are to be promptly reported and seriously dealt with, to strengthen warnings and deterrence, and to strengthen the intensity of supervision.

REFERENCES

[1] Guo Shuang, Chen Ming, Di Changjiang, et al. Journal of Liaoning University of Technology(Social Sciences), 2020, 22(01):89-91+135.

[2] Huang Ru. Research on the effective integration mechanism of various supervisory forces in colleges and universities from the perspective of system concept [J]. Modern Commerce and Trade Industry, 2024, 45(20):77-79.

[3] Li Jun, Huang Yijun. Reflections on the special inspection of the evaluation and distribution of student scholarships and grants in higher vocational colleges [J]. Industry and Science and Technology Forum, 2021, 20(08):243-244.

[4] Research Group of Wuhan Branch of People's Bank of China. Practice and thinking on improving the quality and efficiency of the special supervision work of the People's Bank of China [J]. Legal System and Society, 2021, (13):148-149.

Research Review of Fatigue Testing Machine

Kang Li
Zibo Vocational College, Shandong, China

Abstract: The most effective way to prevent fatigue damage is to conduct fatigue detection test. As an important equipment for testing the mechanical properties of material specimens, the requirement for fatigue testing machine are gradually increasing. This article explores the working principle of traditional fatigue testing machine through relevant literature reading and monograph review, summarizes and generalizes their research status, and predicts the future development trend of fatigue testing machine.
Keywords: Fatigue; Test

1. DOMESTIC RESEARCH STATUS OF FATIGUE TESTING MACHINE

The development of fatigue testing machine in China started relatively late in the 1960s, and its development has gone through a process of introduction, absorption, and re innovation. In 1965, Changchun Testing Machine Research Institute successfully developed China's first high-frequency fatigue testing machine modeled PLG-20C, which has a typical top mounted vibration exciter structure. In the late 1970s, China imported machine from British Instron company, especially the 1603 high-frequency fatigue testing machine. Its machine structure and electronic control system were unique at that time, so many domestic research institutions borrowed many of Instron's new technologies from their products [1]. After the 1980s, the main structure of fatigue testing machines did not change much, and more researchers focused on control system [2]. Currently, there are mainly two types of control systems used: linear sweep amplitude control system and PWM pulse width modulation control system. the popular fatigue testing machines in China were all integrated with technology products at that time. Currently, they have formed a good situation of independent production and stable development.

In addition, for fatigue testing of special materials and special purposes, the fatigue testing devices are all self-made by the researchers. Yuyan Liu and others from Harbin Institute of Technology established a composite material fatigue testing system using the YJY-14B large deformation dynamic extensometer, and studied the fatigue damage characteristics of rubber composite materials [3]; Dacheng Zhang from Peking University and Lei Ding from Beijing University of Technology designed a micro load fatigue testing device based on principle of comb drive [4], conducted finite element simulation and actual testing on the device, and conducted bending fatigue experiments on silicon micro thin films; Chunqiu Zhang and others from Tianjin University of Technology designed a micro fatigue testing machine driven by a voice coil motor [5] and conducted relevant research on articular cartilage.

2. ABROAD RESEARCH STATUS OF FATIGUE TESTING MACHINE

The foreign high-frequency fatigue detection technology can be traced back to the 1860s. Railway engineer Wholer designed the earliest testing machine to simulate axle bending fatigue and conducted relevant experiments. In his published papers on fatigue cycles and stress cycles, he first proposed the concepts of S-N curve and fatigue limit, laying the foundation for modern fatigue testing [6].

In terms of host structure, foreign high-frequency fatigue testing machines are mainly divided into two categories: one is the upper excitation method that places electromagnetic exciters, preloading devices, and counterweights on the upper part of the machine. This type of method has a simple structure, clear transmission links, and has been applied for a long time. However, the air gap adjustment of this layout is difficult due to its high center of gravity and additionally, transportation is inconvenient. the other type is electromagnetic exciter, counterweight, and pre-set load mechanism with downward placement, which has a beautiful appearance

and is now widely used. In the mid to late 1980s, with the continuous development of microelectronics and electronic computer technology, high-frequency [7] fatigue testing machines achieved significant improvements in stability, control accuracy, and loading performance.

In addition to the above, important achievements have also been made in the field of ultrasonic fatigue testing abroad. As early as 1950, Masion designed an ultrasonic fatigue detection device based on piezoelectric ceramic transducers [8]. the device is mainly based on the piezoelectric stretching principle and ultrasonic resonance technology. the piezoelectric transducer, displacement amplifier, and sample constitute a resonance system. the device realizes closed-loop control of the ultrasonic frequency generator, displacement amplifier, and related computer control system, and conducts research on crack propagation rate using video recorders and displays. Neppiras also used piezoelectric ultrasonic fatigue testing technology for the determination of S-N curves of specimens subjected to symmetric load cycles [9], while Mitsche conducted research on fatigue crack propagation of specimens using the aforementioned technology [10]. In 2015, A. Nikitin et al. developed a novel piezoelectric driven pure torsion fatigue testing device [11], which was used for ultrasonic ultra-high cycle fatigue testing of titanium alloys under forging and extrusion conditions. Through experiments, it was found that extruded titanium alloys have higher ultra-high cycle fatigue strength compared to forged titanium alloys.

3. CONCLUSION

Fatigue failure refers to the phenomenon where a component subjected to alternating loads suddenly cracks or fractures at a certain point when its stress is far below its strength limit or even yield limit. the majority of component failures in engineering are caused by fatigue failure. At present, there is no established theory to predict the fatigue life of components under alternating loads, and the mechanical properties of components are usually obtained through fatigue testing experiment. Fatigue testing machine is an important tool on conduct fatigue testing, and its performance is crucial for the implementation of fatigue testing experiment.

Since the beginning of the 21st century, with the development of industrial civilization and changes in human lifestyles, research on fatigue testing machines has shown unprecedented new trends [12-13]. the research direction has also begun to shift from general specimens to special specimens and materials, from traditional loading methods to fully utilizing new materials and mechanisms.

More research institutions and researchers are focusing their energy on improving the load control accuracy, dynamic characteristics, and stability of testing machines, and are committed to developing specialized fatigue testing machines for new materials, new components, special applications, and special working environments [14-17].

In order to improve the stability and accuracy of experiments, more and more new force measuring devices are being applied, such as using high-precision and fast response piezoelectric quartz sensors and resistance strain gauges to replace traditional spring based force measurement methods; In order to collect experimental data more accurately and control the entire experimental process, more and more testing machines are integrating electronic computers and microelectronics technology; In order to make horizontal comparisons of different properties such as tension, bending, and torsion of the same specimen, universal testing machines are becoming increasingly widely used; In order to better load the specimens, testing machines with special test frame structures and special loading fixtures (such as hydraulic clamps) have been developed; To test the mechanical properties of small-scale precious and rare material specimens, many units have developed small and micro fatigue testing machines.

Promoting the development of new fatigue testing machines has immeasurable significance in optimizing the structural design of device products, promoting the improvement of new material performance, promoting the optimization and upgrading of industrial structure, increasing industrial production capacity, optimizing living environment, and improving quality of life.

REFERENCES

[1] Jia, W. A., et al. "A four-axis high-frequency structural strength fatigue test system. " Zhendong yu Chongji/Journal of Vibration and Shock 29.5(2010):86-90.

[2] Xin F, Xinxia H. Design of Marine Riser Fatigue Testing Machine Control System Based on Fuzzy PID [J]. Computer Measurement & Control, 2016.

[3] Liu Yuyan, Wei Yintao, Du Xingwen Research methods for rubber fatigue performance [J]. Rubber Industry, 1997, (05):54-56

[4] Ding Lei, Shang Deguang, Zhang Dacheng, et al. Design of Silicon Micro Thin Film Bending Fatigue Device Based on Resonance Principle [J]. China Mechanical Engineering, 2008(03):330-334. DOI: 10.3321/j. issn: 1004-132X. 2008.03.018

[5] Xu Peng Design and Manufacturing of a High Frequency Micro Fatigue Testing Machine [D]. Tianjin University of Technology, 2014

[6] Pelleg J. Cyclic Stress – Fatigue [J]. Springer International Publishing, 2013. DOI:10.1007/978-94-007-4342-7_6.

[7] Osawa N, Nakamura T, Yamamoto N, et al. Development of a New Fatigue Testing Machine for High Frequency Fatigue Damage Assessment [C]//ASME 2013 32nd International Conference on Ocean, Offshore and Arctic Engineering. 2013. DOI:10.1115/OMAE2013-11582.

[8] Mason W P. Piezoelectric crystals and their application to ultrasonics [M]. D. VAN NOSTRAND, 1950.

[9] Neppiras E A. Techniques and equipment for fatigue testing at very high frequencies [J]. 1959.

[10] Bathias C, Alami K E, Wu T Y. INFLUENCE OF MEAN STRESS ON TI6AL14V FATIGUE CRACK GROWTH AT VERY HIGH FREQUENCY [J]. Engineering Fracture Mechanics, 1997, 56(2):255-264

[11] Nikitin A, Bathias C, Palin-Luc T. A new piezoelectric fatigue testing machine in pure torsion for ultrasonic gigacycle fatigue tests: application to forged and extruded titanium alloys [J]. Fatigue & Fracture of Engineering Materials & Structures, 2015, 38(11):1294-1304.

[12] Wang S, Zhang Z, Ren L, et al. A novel in situ device based on a bionic piezoelectric actuator to study tensile and fatigue properties of bulk materials. [J]. Review of Scientific Instruments, 2014, 85(6):277-286

[13] Fassbender, Melissa. Bionic Opter: the Dragonfly Inspires [J]. Product Design and Development, 2013, 68(4), 16-17

[14] Belouettar S. Fatigue life prediction of cardiovascular stent using finite element method [J]. Computer Methods in Biomechanics & Biomedical Engineering, 2012, 15 Suppl 1(sup1):93.

[15] Bathias C. Piezoelectric fatigue testing machines and devices [J]. International Journal of Fatigue, 2006, 28(11):1438-1445.

[16] Bi Z M, Jr D W M. Finite element analysis for diagnosis of fatigue failure of composite materials in product development [J]. International Journal of Advanced Manufacturing Technology, 2016:1-13.

[17] Bahlman J W, Swartz S M, Breuer K S. Design and characterization of a multi-articulated robotic bat wing [J]. Bioinspiration&biomimetics, 2013, 8(1):016009.

Research on the Development of Business Industry-Education Integration in the Context of New Liberal Arts

Yaoyao Li
Zibo Vocational Institute, Shandong, China

Abstract: The construction of the new liberal arts in the strategic opportunity of its dual attributes to bring positive externalities, the new liberal arts industry and education integration has become inevitable. the integration of industry and education involves the relationship between education and economic and social development, and New Liberal Arts is committed to deep integration to lead the discipline, respond to concerns and break down barriers. Under the new liberal arts perspective, there are problems such as imperfect overall mechanism, insufficient resources for talent cultivation and practical difficulties in the integration of industry and education in business. In this regard, the quality of integration can be improved by promoting the marketization of higher education with a bottom line, improving the "center-edge" structure of universities, and grasping the relationship between the integration of industry and education and the supply and demand of the market. This will not only promote innovation in higher education, but also help China to cope with scientific and technological changes and enhance its global strategic competitive strength.

Keywords: New liberal arts; Business industry-teaching integration; Development strategies

1. INTRODUCTORY

The construction of "new liberal arts" in China started in 2018, and after the official launch of the "six excellence and one top-notch" program 2.0, colleges and universities have actively responded to carry out theoretical research and practical exploration of new liberal arts. At present, China is in a strategic opportunity period of transformation from factor-driven and investment-driven to innovation-driven, and the dual attributes of "science and value" of liberal arts make the construction of "new liberal arts" able to play a strong positive external effect, accelerate the realization of innovation and sustainable development, and promote the efficient and effective development of innovative knowledge results. the dual attributes of "science and value" make the construction of "new liberal arts" play a strong positive external effect, which can accelerate the realization of the sustainable development of innovation and promote the efficient transformation and application of the results of innovative knowledge. the integration of industry and education belongs to the problem domain of the relationship between education and economic and social development, which is not only a study of the mutual influence of education and economy and its debugging, but also an in-depth study of the value of education to industry and its role. At the same time, focusing on the educational mission of the new era of the construction of "new liberal arts", we are committed to leading the direction of disciplines, responding to the concerns of the society, breaking down the barriers of disciplines, and innovating the mechanism of industry-teaching integration and the practice mode of liberal arts majors through the in-depth integration of industry and education in the education system of the liberal arts, so that we can effectively promote the innovation of higher education and make China more comfortable with the development of the economy and the economy. This will not only effectively promote innovation in higher education, but also enable China to cope with the new round of scientific and technological revolution and industrial changes more comfortably, and enhance its ability to cope with future global strategic competition [1].

2. THE IMPRORTANCE OF INDUSTRY-EDUCATION INTEGRATION IN BUSINESS IN THE CONTEXT OF THE NEW LIBERAL ARTS

2.1 Promoting Innovation in Business Education

The new liberal arts emphasizes the cross-fertilization of disciplines and innovative development. the integration of business industry and education can break the disciplinary barriers of traditional business education, introduce enterprise practice resources and cutting-edge knowledge of the industry, and promote the innovation of business education in teaching methods, curriculum system and talent cultivation mode. Through cooperation with enterprises, new teaching modes such as practice teaching and project-driven teaching are carried out to improve students' practical ability and innovation ability.

2.2 Enhance the quality of business talent cultivation

Industry-teaching integration can provide business students with a real enterprise practice environment and practice opportunities, so that students can master professional knowledge and skills in practice and improve their professionalism and employment competitiveness. At the same time, enterprises participate in the process of business talent training, can put forward talent training requirements and suggestions according to their own needs, and jointly formulate talent training programs to ensure that the cultivated business talents meet the needs of enterprises and the market [2].

2.3 Promote economic and social development

Business talents are an important support for economic and social development. the integration of business education in the context of new liberal arts can cultivate high-quality business talents with innovative spirit, practical ability and social responsibility, provide talent support for the development of enterprises, and promote industrial upgrading and innovative development. At the same time, the integration of business industry and education can also promote technological innovation and knowledge transfer between universities and enterprises, contributing to the sustainable development of the economy and society [3].

3. PROBIEMS IN THE DEVELOPMENT OF INDUSTRY-EDUCATION INTEGRATION IN BUSINESS IN THE PERSPECTIVE OF NEW LIBERAL ARTS

3.1 Inadequate design of the overall mechanism for the integration of industry and education

At the same time, the inefficiency and fragmentation of resource allocation have also seriously affected the effect of the integration of industry and education. Resources have not been reasonably integrated and optimally allocated, resulting in the inability of each link to operate efficiently and synergistically.

Whether it is economics, law or arts education and other liberal arts majors, it is difficult to form a synergy in the cultivation of excellent talents under the current mode of industry-education integration. On the one hand, there is a lack of regulation and guidance for the behavior of all parties in the process of industry-education integration due to the lack of an effective institutional system to bind responsibilities and rights. Enterprises may not be highly motivated because of the fear of not getting a corresponding return on their investment, while universities may lack pertinence and effectiveness in the formulation and implementation of talent cultivation programs. On the other hand, although the integration of industry and education has played a role to a certain extent, the overall form is loose. the cooperation between the parties lacks close contact and effective coordination mechanism, and is often only superficial, making it difficult to promote talent training in depth.

In addition, insufficient motivation for the integration of industry and education is also a prominent problem. the concept of talent cultivation is lagging behind, failing to fully recognize the importance of industry-education integration for cultivating high-quality business talents. Positioning is not very clear, resulting in a disconnect between the objectives of talent cultivation and industrial demand, and failing to meet the actual demand for talents in industrial development. Compared with the goal of deep

integration of industry and education, there is still a big gap. This gap is not only reflected in the weakness of the practical teaching link, but also in the imperfection of the curriculum system, the lack of adaptation of the faculty and the evaluation mechanism. Only by deeply recognizing these problems and taking effective measures to solve them can we truly realize the deep development of business industry-teaching integration in the context of the new liberal arts and lay a solid foundation for the cultivation of outstanding business talents.

3.2 Inadequate resource system for talent cultivation

Under the system of industry-teaching integration, optimizing talent cultivation requires the adoption of multifaceted strategies, which include important initiatives covering the package of industry-academia-research as well as faculty construction. the close integration of industry-academia-research can provide a richer practical scene and innovative power for talent training, through the integration of actual projects of enterprises, cutting-edge research of scientific research institutions and theoretical teaching in schools, so that students can be exposed to the real industrial demand and technological development trend in the learning process. Teacher construction is the key to ensure the quality of talent training, and the cultivation of a "dual-teacher" team of teachers with both profound theoretical knowledge and rich practical experience can provide students with more practical and targeted guidance. However, a serious problem currently faced is the inadequate resource system, which makes the promotion of industry-teaching integration difficult. In the talent training program, curriculum development faces difficulties. On the one hand, due to the lack of in-depth understanding of industrial needs, it is difficult to closely integrate the curriculum development with the actual situation, resulting in poor practicality of the curriculum. Students are often unable to acquire knowledge and skills directly related to their future career development in the learning process. On the other hand, there is a serious lack of awareness of resource integration between industry and universities. There is a lack of effective communication and coordination between all parties on resource input, which is prone to disorderly input. Such disordered inputs may result in redundancy in resource utilization, i. e., over-concentration of resources in some areas but lack of resources in others; they may also lead to misalignment of resources, i. e., mismatch between resource inputs and actual needs; and even lack of resources, i. e., lack of necessary resource support for key links. This not only wastes valuable resources, but also seriously affects the effectiveness of industry-education integration and the quality of talent training.

3.3 Dilemma of practicality of industry-education integration

First of all, the practical performance of the integration of industry and education is poor. In actual operation, it is often difficult to put in place the support of human, financial and material factors. On the one hand, in terms of human resources, there is a relative lack of teachers with both solid professional theoretical knowledge and rich practical experience, and the degree of participation of excellent talents in enterprises in teaching is also very limited; on the other hand, in terms of financial support, both the government's financial input and the enterprise's capital injection are insufficient, which leads to a lack of practical teaching resources, such as imperfect construction of internship bases, old and backward experimental equipment, etc. equipment is old and backward, etc. In terms of material resources, the relevant teaching facilities and practice sites are difficult to meet the needs of industry-teaching integration.

Meanwhile, the disciplinary theory-oriented professional talent cultivation mode still occupies an absolute position. Under this model, the teaching process pays excessive attention to the teaching of theoretical knowledge and pays insufficient attention to the cultivation of practical ability. This makes the integration of industry and education in the implementation of the content and the expected to achieve the goal there is a big gap. Under such a training system, it is difficult for students to improve their practical skills and unable to meet the needs of enterprises for application-oriented talents. the integration of industry and education should be a deep cooperation between colleges and universities and enterprises to jointly cultivate high-

quality talents adapted to the market demand, but the existence of practical dilemmas makes the realization of this goal face great challenges.

4. RESEARCH ON THE DEVELOPMENT CUONTERMEASURES OF INDUSTRY-EDUCATION INTEGRATION IN BUSINESS UNDER THE PERSPECTIVE OF NEW LIBERAL ARTS

4.1 Promoting the marketization of higher education with a bottom line is the key to enhancing the quality and integration of industry and education

In reality, except for those industries with public welfare, both industrial enterprises and colleges and universities actively deepen the integration of industry and education, fundamentally for the purpose of meeting their own needs in terms of technology or products. For industrial enterprises, they expect to obtain scientific research results, innovative technologies and high-quality professionals from universities through cooperation with universities, so as to enhance their competitiveness and innovation ability and promote the sustainable development of enterprises. As for universities, through cooperation with enterprises, they can provide students with practice opportunities, enrich teaching resources, improve teaching quality, and also promote the transformation of scientific research results and enhance the social influence of universities [4].

4.2 The “center-edge” structure of colleges and universities restricts the implementation of industry-education integration

China's higher education system shows a trend of transition from the center to the periphery based on the quality of education, academic output and reputation. the operation and development of institutions are affected by the “center-periphery” structure of the higher education system, which makes the disadvantaged institutions face a lot of problems in the integration of industry and education, including the goal of the integration of industry and education, financial support, faculty's executive power and the influence of cooperative enterprises.

4.3 The impetus of industry-education integration is related to the supply and demand of the market

Except for the public welfare industry, the deepening of the integration of industry and education by industrial enterprises and universities is essentially to meet their own needs in terms of technology or products, etc. Therefore, the establishment of interaction and cooperation between universities and industries is subject to the substitutability costs and expected benefits of the products or services that higher education can provide [5].

5. CONCLUSION

The integration of industry and education belongs to the domain of the relationship between education and economic and social development, which is not only a study of the mutual influence of education and economy and its debugging, but also an in-depth study of the value of education to industry and its role. At the same time, focusing on the educational mission of the new era of the construction of “new liberal arts”, we are committed to leading the direction of disciplines, responding to the concerns of the society, breaking down the barriers of disciplines, and innovating the mechanism of industry-teaching integration and the practice mode of liberal arts majors through the in-depth integration of industry and education in the education system of the liberal arts, so that we can effectively promote the innovation of higher education and make China more comfortable with the development of the economy and the economy. This will not only effectively promote innovation in higher education, but also enable China to cope with the new round of scientific and technological revolution and industrial changes more comfortably, and enhance its ability to cope with future global strategic competition.

REFERENCES

[1] Zhu Chao. Analyzing the development mode of industry-education integration [J]. High Technology and Industrialization, 2024, 30(06):87-88.

[2] Li Yannan. Research on the innovative mechanism for the development of industry-teaching integration in local universities [J]. Shanxi Youth, 2024, (04):29-31.

[3] ZHANG Rui, JING Tao. Research on the

Development of Industry-Education Integration in Local Colleges and Universities under the Perspective of “Double Creation” [J]. Science and Education Journal, 2023, (13):5-7.
[4] Tian Jing. Exploration and practice of the development mode of industry-teaching integration in China's higher vocational colleges and universities [J]. University, 2021, (01):105-106.
[5] CHEN Xing, ZHANG Xuemin. Transcendence in dependence: Exploration of deepening the reform of industry-teaching integration in applied colleges and universities [J]. Tsinghua University Education Research, 2017, 38(01):46-56.

Analysis of Internationalization Paths and Strategies for Higher Vocational Colleges

Xiaoling Liu
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: In the context of globalization, the international development of higher vocational colleges (hereinafter referred to as "vocational colleges") has become a necessary means of enhancing national competitiveness and cultivating internationally skilled talents. This paper analyzes the characteristics and trends of higher vocational education in developed countries, the current status of international development in Chinese vocational colleges, and the challenges faced. It suggests that vocational colleges should accelerate their internationalization by focusing on areas such as curriculum internationalization, faculty internationalization, international exchange and cooperation, student training with a global perspective, the construction of international mechanisms, and the creation of a multicultural campus environment. These recommendations provide valuable insights for advancing the internationalization efforts of Chinese vocational colleges.

Keywords: Vocational Colleges; Internationalization; Curriculum Internationalization; Faculty Development; Student Training; International Exchange and Cooperation

1. INTRODUCTION

The rapid development of globalization has set higher requirements for vocational education. Higher vocational colleges must not only meet domestic market demands but also cultivate skilled talents with international competitiveness. Internationalization is not only a critical direction for optimizing the vocational education system but also a vital means of enhancing national comprehensive competitiveness. Therefore, advancing the internationalization of vocational colleges has become an essential topic in vocational education reforms across various countries.

2. CHARACTERISTICS AND TRENDS IN HIGHER VOCATIONAL EDUCATION IN DEVELOPED COUNTRIES

Globally, countries with well-developed higher vocational education systems include Germany, Japan, Australia, Switzerland, and some Nordic countries such as Sweden and Finland. In Germany and Japan, vocational education emphasizes the integration of practical skills and theoretical knowledge, balancing classroom learning with corporate internships. Both the government and enterprises share educational costs, ensuring that curricula are closely aligned with industry needs. This model not only enhances students' employability but also strengthens national competitiveness.

Australia's vocational education and training (VET) system is highly flexible, allowing students to choose courses based on personal interests and career development needs. the government supports vocational education through national funding programs and various scholarships. Switzerland is renowned for its efficient vocational education system, where vocational and general education develop in parallel, with a strong focus on practical skills. Through partnerships between companies and schools, educational content remains closely aligned with market demands. Nordic countries generally place a high emphasis on vocational education. Finland, in particular, has established close links between vocational schools and higher education institutions, enabling students to seamlessly transition to higher education and attain advanced degrees after completing vocational training.

It is evident that these countries have promoted the sustainable development of higher vocational education through policy support, corporate involvement, and curriculum innovation, fostering a large pool

of high-quality vocational talent that bolsters their international competitiveness. Overall, higher vocational education in developed countries is undergoing significant changes:

2.1 Clear Internationalization Trend

Many countries are advancing the internationalization of higher vocational education by attracting international students and facilitating global collaboration. For example, Germany and Australia are actively engaging in international exchange programs in vocational education, allowing students to gain globally recognized qualifications and experiences.

2.2 Skill-Oriented Focus

Higher vocational education worldwide is increasingly emphasizing skill development to meet the demands of a rapidly changing labor market. Curricula and training programs are continuously updated to ensure that students acquire the skills necessary for modern professions.

2.3 Rise of Online Learning

With technological advancements, online learning has become a crucial component of higher vocational education. Many vocational colleges now offer online courses and remote training, a trend that has accelerated, particularly during the pandemic, transforming traditional educational models.

2.4 Widespread Corporate Involvement

Companies play an increasingly essential role in vocational education. Many higher vocational institutions collaborate with companies to provide internships and practical projects, helping students transition more effectively into the workforce.

2.5 Unprecedented Policy Support

Governments worldwide recognize the importance of vocational education, implementing policies to support its development. For example, Germany introduced the "Vocational Training Act" (BBiG), which provides a legal framework for vocational training, ensuring its standardization and professionalization. the Japanese government has established various laws and policies supporting vocational education, such as the "Higher Education Act" and the "Vocational Education Act, " which define the objectives, content, and management mechanisms for vocational education, providing a legal foundation for the advancement of higher vocational education.

3. CHALLENGES FACING THE INTERNATIONALIZATION OF CHINESE HIGHER VOCATIONAL COLLEGES

Entering a new era, the development of higher vocational education in China has gained momentum, achieving significant progress in policy support, institutional development, and societal recognition, making it an essential pathway for cultivating technical talents. Currently, Chinese higher vocational education mainly encompasses associate and bachelor's degree levels, typically offered by higher vocational colleges, technical institutes, and some comprehensive universities. According to data published on the Ministry of Education's website, as of June 20, 2024, there are 1, 611 higher vocational institutions in China, including 1, 560 at the associate degree level and 51 at the bachelor's degree level, representing an increase of 33 institutions compared to 2023. the number of enrolled students has exceeded 10 million, reflecting the growing prominence of vocational education within China's educational system.

With China's deep integration into the global economy, the pace of internationalization in higher vocational education has significantly accelerated. In the context of globalization, the internationalization of vocational education has become a key strategy for enhancing the quality of talent cultivation and strengthening students' competitiveness. However, it is essential to recognize the numerous challenges that Chinese vocational colleges face in this process, primarily in the following areas:

3.1 Differences in Educational Systems

In vocational education, there are considerable differences in educational systems and curriculum design across countries. Notably, there is significant divergence in course content, educational standards, and evaluation systems. For example, some countries emphasize a blend of theory and practice, while others lean towards skill-based, hands-on training. These discrepancies mean that vocational colleges must align with various standards and credit systems, posing challenges for credit transfer and course

consistency. Additionally, this requires vocational colleges to adjust their curricula to meet the needs of internationalization while still aligning with domestic vocational education goals.

3.2 Limitations in Funding and Resources

Internationalization efforts in vocational colleges require substantial financial support. First, an internationalized education calls for the hiring of faculty with international backgrounds or supporting current faculty in overseas training, both of which require significant funding. Moreover, introducing international curricula, organizing exchange programs, and establishing joint programs all need adequate resource allocation. Many vocational colleges, especially those in less developed regions, struggle with resource constraints, lacking sufficient funding and policy support. These limitations have restricted the internationalization progress, making it difficult for some promising international programs to proceed smoothly. Therefore, advancing internationalization requires collaborative efforts from society, businesses, and government to provide broader support for vocational colleges.

3.3 Enhancing Teachers'and Students'Adaptability

In the process of internationalization, teachers' cross-cultural abilities and international perspectives are particularly crucial. Internationalized teaching requires teachers to have a deep understanding of diverse cultures and to incorporate international elements into their instruction, providing students with knowledge and skills that meet global standards. However, some teachers lack sufficient international experience and multicultural adaptability, making it challenging for them to engage in internationalized teaching effectively. Additionally, student adaptability is another key factor. While vocational students often have strong professional skills, their language proficiency and cultural adaptability are generally weaker, particularly in English and other foreign languages, which makes it difficult for them to participate in international exchange programs. For this reason, vocational colleges need to strengthen language training and cross-cultural courses to help students improve their language proficiency and cross-cultural communication skills, better preparing them to adapt to international environments.

4. STRATEGIES AND RECOMMENDATIONS FOR THE INTERNATIONALIZATION OF VOCATIONAL COLLEGES

To advance the internationalization of vocational colleges, the following approaches are recommended:

4.1 Promote the Internationalization of the Curriculum

Curriculum internationalization is central to the internationalization efforts of vocational colleges. By adopting widely recognized international curriculum standards, such as the European Credit Transfer and Accumulation System (ECTS) or international vocational certification standards, institutions can enhance the global recognition of their programs. Additionally, multi-language teaching and cross-cultural courses should be introduced to equip students with multicultural communication skills for a global work environment. Specific measures include introducing international vocational certification courses, such as the UK's NVQ or Germany's Dual System, and collaborating with international enterprises to develop globally standardized course modules tailored to local needs.

4.2 Build an Internationalized Faculty

An internationalized faculty is essential for enhancing the global competitiveness of vocational education. By expanding international training, overseas study, and transnational exchanges for teachers, colleges can improve the international teaching and research capabilities of their faculty. Establishing overseas training mechanisms and collaborating with renowned international vocational institutions will facilitate short- and long-term development opportunities for teachers. Actively recruiting foreign faculty with international experience can also enrich the teaching teams of vocational colleges.

4.3 Focus on International Student Development

Students are the direct beneficiaries of internationalization. International student exchange programs help broaden students' global perspectives, strengthen cross-cultural

communication skills, and boost their competitiveness in the international job market. Efforts could include promoting student participation in international exchange programs and establishing student exchange mechanisms with foreign vocational institutions. Additionally, encouraging students to participate in international vocational skill competitions will further develop their international skills.

4.4 Enhance International Exchange and Cooperation

Expanding international cooperation channels with educational institutions and multinational enterprises can help establish stable, long-term partnerships. Joint curriculum development and international internships can be implemented to raise the international standards of vocational colleges.

4.5 Establish Flexible Internationalization Mechanisms

Vocational colleges should devise flexible internationalization strategies according to the vocational education systems and market demands of different countries. When introducing international courses or aligning credit systems, institutions should account for differences in vocational education frameworks to create an internationalization model that aligns with their development goals.

4.6 Accelerate the Creation of a Multicultural Campus

Advancing the internationalization of vocational colleges requires more than just curricular and teaching adjustments; it also involves cultivating a global learning environment through campus culture. Hosting international cultural festivals, forums, and similar activities will enhance students' awareness of multiculturalism and foster a sense of global citizenship. Regularly held international cultural exchange events can facilitate interactions with international peers, while exchanges with overseas vocational colleges and guest lectures from renowned scholars and industry experts can further enrich the campus environment.

5. CONCLUSION

The international development of vocational colleges is a key strategy for addressing the challenges of globalization and enhancing talent competitiveness. In the context of globalization, vocational colleges not only need to cultivate locally-oriented professionals with specialized skills but also composite talents who possess an international perspective and cross-cultural communication abilities. This requires comprehensive planning and sustained investment in areas such as curriculum design, faculty development, student training, international cooperation, and mechanism innovation.

First, the internationalization of the curriculum is a core aspect of enhancing students' global competitiveness. By introducing advanced international teaching content, industry standards, and innovative teaching methods, vocational colleges can closely align professional knowledge with global market demands.

Second, an internationally diverse faculty is an important guarantee for improving the educational quality of vocational colleges. By hiring teachers with international backgrounds or encouraging current faculty to pursue further studies abroad, colleges can help educators master cutting-edge teaching concepts and methods, which they can then apply in the classroom. Additionally, faculty exchanges with foreign vocational education institutions or enterprises allow teachers to integrate international perspectives into their teaching, providing students with a richer learning experience.

Third, the internationalization of student training is a core goal of vocational colleges' international efforts. Schools can establish joint training programs with foreign vocational institutions, implement internship exchange plans, or offer overseas study opportunities to help students gain international experience during their studies. This approach not only enhances students' language skills and cross-cultural communication abilities but also provides them with a greater competitive edge in the future global job market.

Fourth, international exchange and cooperation are effective ways for vocational colleges to enhance their influence. By establishing partnerships with international vocational education alliances, industry associations, and companies, schools can absorb advanced educational concepts,

technologies, and industry standards, injecting new vitality into local teaching. Collaboration with enterprises, academic exchanges, and hosting international seminars also provide platforms for students and teachers to access international resources.

Fifth, establishing flexible internationalization mechanisms is crucial for ensuring the sustainable advancement of vocational colleges' internationalization efforts. Schools should develop management systems and support policies that align with international development and enhance the international service capabilities of administrative departments to ensure the efficient implementation of various internationalization initiatives.

In summary, the internationalization of vocational colleges is a systematic project. Through the coordinated advancement of curriculum, faculty, students, cooperation, and mechanisms, vocational colleges can smoothly integrate into the global vocational education system, provide students with broader career development opportunities, and promote the high-quality development of vocational education in China.

REFERENCES

[1] Zhao Yingchun, Xie Fang, Long Qianqi. Taking the road of internationalization development of vocational education with connotation. Shenzhou Scholar, 2024, 4:21-25.

[2] Yu Hongjiao. Internationalization of Vocational Education in the New Era: What to Do, Difficult to Do and What to Do [J]. Education Progress, 2023, 13(3):1140-1144.

[3] Ding Jinxiao, Gong Xiaoyong. Internationalization of Higher Vocational Education in the Post-Epidemic Era: Challenges and Opportunities and Action Strategies [J]. China Vocational and Technical Education, 2021(31):53-58.

[4] Li Weiwei, Wang Xueying. Motivation, Significance and Path of Internationalization of Vocational Education [C]//Guangdong Higher Education Society 2021 Symposium. Proceedings of the 2021 Symposium of Guangdong Higher Education Society, 2021:24-33.

[5] PANG Shijun, LIU Jing. Connotation and mode of internationalization of vocational education [J]. Vocational Education Forum, 2016(25):11-16.

[6] Liu Geping, Wang Xing. Virtual reality reshaping online education: learning resources, teaching organization and system platform [J]. China Electronic Education, 2020(11):87-96.

On the Cultivation of Innovation and Entrepreneurship Ability of College Students in Vocational Education

Yingcong Lu
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: The Chinese government attaches great importance to the innovation and entrepreneurship of college students and has introduced a series of policies and measures to bring innovation and entrepreneurship education in vocational education colleges to a new stage. However, with the new requirements of the development of new productive forces in China, facing the rapid development of green economy and digital economy, and facing the severe situation of college students' employment, the innovative and entrepreneurial education of vocational colleges still has a lot of inadaptability. In view of the main problems, this paper puts forward the main ways to solve these problems, and the ideas to further improve the innovation and entrepreneurship ability of vocational education students in the future, which is of great significance for vocational colleges to do a good job in innovation and entrepreneurship of college students.

Keywords: Innovation and Entrepreneurship; Vocational Education

1. THE COMMUNIST PARTY OF CHINA AND THE STATE ATTACH GREAT IMPORTANCE TO COLLEGE STUDENTS' INNOVATION AND ENTREPRENEURSHIP

The 18th National Congress of the Communist Party of China made important arrangements for the training of innovative and entrepreneurial talents and organized implementation, and the report of the 20th National Congress of the Communist Party of China pointed out that "science and technology must be the first productive force, talent is the first resource, and innovation is the first driving force. " In 2015, the General Office of the State Council issued the Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Institutions of Higher Learning (2015) No. 36); In 2021, the General Office of the State Council again issued the Guiding Opinions on Further Supporting College Students' Innovation and Entrepreneurship (2021) No. 35), which pointed out that "adhere to innovation leading entrepreneurship, entrepreneurship driving employment, and support college students to enhance innovation and entrepreneurship. " Since 2015, 11 departments, including the Ministry of Education and the United Front Work Department of the CPC Central Committee, have jointly sponsored the China "Internet Plus" College Student Innovation and Entrepreneurship Competition, which has been held for eight consecutive sessions, with wide influence and strong promotion of college student innovation and entrepreneurship (Cao, 2022). Since 2023, the competition has been renamed "China International Innovation Competition" and has been held for two times. From October 12-15, 2024, "China International Innovation Competition" was held at Minhang Campus of Shanghai Jiao Tong University.

2. MAIN PROBLEMS EXISTING IN INNOVATION AND ENTREPRENEURSHIP EDUCATION IN VOCATIONAL COLLEGES

In recent years, as China accelerates its march toward an innovation-oriented country, vocational colleges have earnestly implemented the relevant spirit of the Party and the state on strengthening innovation and entrepreneurship education for college students, and innovation and entrepreneurship education has been continuously promoted in depth, and remarkable results have been achieved. However, in the face of the new

requirements of the country to vigorously develop vocational education, in the face of the new needs of the development of new quality productive forces in our country, and in the face of the current severe employment situation of college students, there are still many problems in the innovation and entrepreneurship of vocational colleges.

2.1 First, the understanding of the importance of strengthening students' innovation and entrepreneurship education is still insufficient.

Many vocational college leaders and teachers still believe that innovation and entrepreneurship education is a matter for a small number of students, and can not be considered from the height of promoting employment, improving the quality of talent training, promoting the digital transformation and upgrading of enterprises, and building an innovative country. Some simply think that organizing to participate in the "China International College Students Innovation Competition" is to engage in innovation and entrepreneurship education (Cui, 2021). Many vocational colleges lack top-level design and overall arrangement for the construction of innovation and entrepreneurship education system and the strengthening of innovation and entrepreneurship education throughout the process, and innovation and entrepreneurship education is often "important to talk about, but secondary to doing. "

2.2 Second, the integration of professional education and innovation and entrepreneurship education is low.

Professional teachers often lack awareness of innovation and entrepreneurship in teaching, lack of practical teaching ability of innovation and entrepreneurship, lag in the construction of specialized innovation and integration courses, and the implementation of innovation and entrepreneurship education throughout the whole process of education and teaching is not in place.

2.3 Third, there is a disconnect between innovation and entrepreneurship education and enterprise management.

Innovation and entrepreneurship education in many colleges and universities still stays in the classroom teaching, the integration of production and education is low, the lack of integration of production and education innovation and entrepreneurship platform, the lack of professional high-level teachers, innovation and entrepreneurship education is out of touch with the market, and the actual operation of enterprises. Although various colleges and universities have opened courses such as entrepreneurship foundation and employment guidance, the professional teachers are not strong, the lack of innovation and entrepreneurship practice, the teacher team is unstable, and the class quality is not high.

2.4 Fourth, the level of participating projects in the innovation competition is not high, and even fraud and other phenomena.

From the original "Internet +" competition to the current China International College Student Innovation Competition, a small number of students have the undesirable phenomenon of pulling hard, temporarily looking for projects from the society, and teachers doing projects on behalf of students.

2.5 Fifth, the cultivation of college students' innovative consciousness, innovative thinking and innovative accomplishment is insufficient.

No matter from the professional teaching or public basic course teaching, there is a general problem of insufficient cultivation of college students' innovative literacy.

3. THE MAIN WAYS TO IMPROVE THE INNOVATION AND ENTREPRENEURSHIP ABILITY OF VOCATIONAL COLLEGE STUDENTS

Further enhance the awareness of innovation and entrepreneurship education. All vocational colleges should highly understand the importance of innovation and entrepreneurship from the perspective of building an innovation-oriented country, strengthening the integration of science and education, and cultivating innovative technical skills, and the whole school should play a game of chess, do a good job in the top-level design of innovation and entrepreneurship, further increase investment, and promote innovation and entrepreneurship education in an all-round way.

Establish a long-term operation model with the College of Innovation and Entrepreneurship as the guide and the

secondary schools as the main body. At present, most vocational colleges have innovation and entrepreneurship colleges, some of which are based on teaching units, some are based on administrative functions, and some have both. the supervisor is responsible for the innovation and entrepreneurship work of the whole school. the focus is to be responsible for innovation and entrepreneurship education and teaching, innovation and entrepreneurship curriculum construction, innovation and entrepreneurship base construction and management, organization of innovation and entrepreneurship competition, innovation and entrepreneurship project cultivation and incubation. However, in general, the institutional mechanism of some institutions has not been straightened out, and the operation efficiency is not high. Each school should combine the reality, innovate the management mechanism, effectively establish the operating mechanism of innovation and entrepreneurship college as the guidance, secondary schools as the main body, optimize and improve the evaluation system, in order to truly achieve innovation and entrepreneurship education throughout the whole process of education and teaching.

Establish a practical teaching system for innovation and entrepreneurship education. All professional groups should strengthen top-level design, adhere to the integration of production and education and the integration of innovation and innovation, jointly formulate personnel training plans, strengthen labor education, highlight the cultivation of students' professionalism, innovation and craftsman spirit, build an integrated practical teaching system from classroom innovation and entrepreneurship basic teaching, practical exercise guidance training, to project incubation and competition, and carry out high-quality innovation and entrepreneurship training. Form a model that can be copied and promoted, and effectively enhance the innovation and entrepreneurship ability of college students. It is necessary to increase the construction of specialized and integrated courses, build a specialized and integrated curriculum system, and promote the deep integration of professional education and innovation and entrepreneurship education. In combination with professional education, small inventions and small creations should be vigorously advocated among college students to create a strong atmosphere of innovation and creation.

To build a high-level professional team of innovation and entrepreneurship teachers. At present, the overall level of innovation and entrepreneurship teaching teachers and innovation and entrepreneurship competition tutors in many vocational colleges is not high. Although courses such as "Foundation of Entrepreneurship" have been included in compulsory courses, the class teachers often transfer basic courses and other teachers to teach, and the teaching quality is not high, and even there are coping phenomena. Due to the specialty particularity of innovation and entrepreneurship projects, the mentors guiding innovation and entrepreneurship competitions are usually part-time teachers of specialized courses, and there is a mismatch between basic course teachers and competition guidance tutors in different schools, which cannot form a joint force between daily teaching and competition guidance. Vocational colleges should attach as much importance to the training of innovation and entrepreneurship teachers as professional teachers, recruit and introduce a group of backbone teachers, strengthen the training of existing teachers' teaching ability in innovation and entrepreneurship education, reform teaching methods and assessment methods, and encourage teachers to integrate the latest research results and practical cases at home and abroad into classroom teaching. We will build a team of high-level innovation and entrepreneurship teachers with an international perspective and strong practical ability.

Strengthen guidance and assistance for college students to participate in innovation and entrepreneurship competitions. Organizing students to participate in the China International College Students Innovation Competition and other activities is a very effective way to improve college students' innovation and entrepreneurship ability (Li et al., 2023). It is necessary to build a support mechanism for vocational college students from enrollment innovation and entrepreneurship education, instructor

selection, competition project selection and cultivation, to the whole process of competition guidance, be good at finding innovative and entrepreneurial talents among college students, be good at selecting good projects, provide students with all-round guidance and help, and improve students' innovation and entrepreneurship ability in the cultivation of projects one by one. Innovation will lead entrepreneurship and promote employment through entrepreneurship. It is necessary to vigorously strengthen the construction of innovation and entrepreneurship incubation bases and maker bases, and create a practical and digital teaching environment for students' daily training. Strengthen the integration of industry and education, school-enterprise cooperation, and strive to build a diversified innovation and entrepreneurship exchange platform for students.

4. FURTHER THINKING ON IMPROVING THE INNOVATION AND ENTREPRENEURSHIP ABILITY OF VOCATIONAL COLLEGE STUDENTS

The Third Plenary Session of the 20th CPC Central Committee emphasized the need to strengthen the cultivation of innovation ability. Under the new requirements of the development of new quality productive forces, we should strengthen the training of innovation and entrepreneurship ability of vocational college students.

4.1 First, college should generally strengthen the cultivation of students' innovative awareness, innovative thinking, innovative spirit and other innovative qualities.

Innovation is the basis and premise of entrepreneurship, China's educational tradition emphasizes too much academic education, book education, from kindergarten to high school, innovative thinking learning and training is insufficient. Due to college entrance examination and other reasons, vocational college students lack self-confidence after admission, and lack enough understanding and experience of innovation and entrepreneurship. the cultivation of creative literacy of college students is not a day's work, vocational colleges should attach great importance to the cultivation of innovative literacy of college students, insist on starting from the entrance education, strengthen the top-level design, and pay attention to the integration of specialized innovation. Strengthen the cultivation of teachers' innovative literacy, set up courses such as design thinking and innovative thinking among college students universally, carry out innovative activities, and strengthen the training of innovative thinking. Highlight the cultivation of professional spirit, artisan spirit, innovative spirit and entrepreneurial spirit, and strive to achieve full coverage.

4.2 Second, we should draw the spiritual strength of innovation, entrepreneurship and creation from traditional culture.

The Chinese nation is a great nation full of innovative and entrepreneurial spirit. the Chinese traditional culture is extensive and profound, and it has extremely rich resources for innovation and entrepreneurship. It is necessary to actively tap these valuable assets and guide college students to learn and inherit the innovative and entrepreneurial spirit of the Chinese nation, such as being brave in innovation, not afraid of difficulties, and constantly striving for self-improvement.

4.3 Third, we will strengthen the culture of innovation and entrepreneurship. It is necessary to increase the construction of innovation and entrepreneurship culture, and strengthen the publicity and promotion of innovation and entrepreneurship education results.

Combined with business practice, strengthen regional entrepreneurship policy publicity, experience sharing and practical guidance, etc., to form a cultural atmosphere where everyone speaks of innovation and innovation is everywhere.

5. CONCLUSION

It is necessary to further strengthen the training of innovation and entrepreneurship ability of vocational college students, promote the employment and entrepreneurship of college students, improve the quality of vocational education personnel training, promote the transformation and upgrading of industrial digitalization and greening, train more craftsmen and skilled craftsmen from major countries, and make positive contributions to the promotion of Chinese-

style modernization.

REFERENCES

[1] Cao, Y. (2022). A Study of the Influencing Factors of Higher Vocational College Students' Entrepreneurial Intention. Procedia Computer Science, 214, 212–220. https://doi. org/10.1016/j. procs. 2022.11.168

[2] Cui, J. (2021). the Impact of Entrepreneurship Curriculum with Teaching Models on Sustainable Development of Entrepreneurial Mindset among Higher Education Students in China: the Moderating Role of the Entrepreneurial Climate at the Institution. Sustainability, 13(14), 7950. https://doi. org/10.3390/su13147950

[3] Li, Y., zhang, yup, jiang, jiang, jiang, wen, & Zhang, feng. (2023). College students' entrepreneurial education, grit personality and entrepreneurial intention: A mediated moderating model. Psychological and Behavioral Research, 21(3), 425.

Research Progress in Generating Electricity Materials

Hongyu lv, Yawen Li, Yuanyuan Qu*
Department of Materials and Chemical Engineering, Zibo Vocational Institute, Shandong, Zibo 255314, China
**Corresponding Author.*

Abstract: Traditional fossil fuels have supported human progress while also causing problems such as resource depletion, environmental pollution, and climate change. Therefore, seeking clean, efficient, and renewable energy alternatives has become a global consensus. Among the renewable energy sources, research and application of power generation materials have received widespread attention, playing a crucial role in energy conversion and storage.
Keywords: Energy; Clean; Power Generation Materials

1. INTRODUCTION

Power generation materials refer to materials that can directly convert various forms of energy into electrical energy, mainly including solar cell materials, thermoelectric materials, fuel cell materials, piezoelectric materials, etc. These materials have broad application prospects in the field of new energy, such as photovoltaic power generation, thermoelectric power generation, dye cell power generation, etc. In recent years, with the cross integration of materials science, chemistry, physics and other fields, significant progress has been made in the research of power generation materials, providing important support for solving energy crises and environmental problems.

This article aims to provide an overview of the current research status and development trends of power generation materials.

2. PHOTOVOLTAIC POWER GENERATION

The working principle of solar photovoltaic power generation is the photovoltaic effect, which is called a "photovoltaic system" in practical applications. This effect collects energy from the sun and converts solar energy into electrical energy. It is composed of photovoltaic cells, which are made of semiconductor materials such as silicon (Si). Their function is to convert sunlight into direct current through the photoelectric effect [1]. It has environmentally friendly features, and unlike other renewable energy technologies such as wind turbines and hydroelectric power systems [2].

Solar power generation mainly adopts two core modes: networked and independent operation. the networking mode refers to connecting the power generation system with the regional or national power grid to achieve mutual exchange of energy. However, every part of the power grid is interconnected and influences each other like human organs. the volatility of new energy generation, unlike traditional stable power generation methods, may lead to instability in the power grid, thereby affecting consumers' electricity usage experience. In contrast, the independent operation mode is currently a more reliable solar power generation method, which only provides electricity for specific buildings and is not connected to the large power grid. Although the independent operation mode provides a compromise solution for the commercialization of solar energy, it effectively maintains the overall stability of the power grid despite its limited power support.

3. THERMAL POWER GENERATION

Thermoelectric power generation technology, also known as thermoelectric power generation technology, is based on the Seebeck effect between thermoelectric materials as a principle to generate electricity using temperature difference [3]. The Seebeck effect was first discovered by German scientist Seebeck in 1821 during experiments. It refers

to the generation of electrostatic potential and current in a closed circuit composed of two different conductors or semiconductors with different conductivity types when different temperatures are applied to the two end junctions.

In the evolution of thermoelectric power generation technology, the initial thermoelectric devices were not ideal in terms of energy conversion efficiency and had relatively high production costs. They were mainly used in high-end technological fields such as aerospace, national security, and military. Later, with the gradual improvement of the performance of thermoelectric materials, thermoelectric power generation technology began to be applied in both civilian and industrial fields [4].

4. DYE BATTERY POWER GENERATION

In DSSC components, the photoanode plays a crucial role as a key component. TiO2 has three different crystal forms: rutile, perovskite, and rutile. Due to its fast charge transfer rate, rutile has been widely used in DSSCs [5]. Usually, TiO2(3D) nanofilms are used as photoanode materials [6].

In 1991, Gratzel's research group [7] first reported dye-sensitized solar cells. DSSCs based on nanocrystalline TiO_2 as a photoanode have lower costs and higher energy conversion efficiency than ordinary solar cells [8-10]. This makes it susceptible to many factors such as particle size, specific surface area, and crystallinity when used as a photoanode material. However, $TiO_2$and nanoparticles are mostly zero dimensional quantum dots, making it difficult to improve specific surface area and electron transfer rate. Therefore, the synthesis of low dimensional single crystal TiO2 has attracted widespread attention [11].

Tributsch [12] studied DSSCs with chlorophyll sensitized ZnO as a photoanode, but due to insufficient adsorption of dyes on MOS surfaces, the light capture based on ZnO was reduced. Metal oxides such as TiO_2, ZnO, SnO_2, $SrTiO_3$, $ZnzSnO_4$, WO_3, Nb_2O_5, MgO, Al_2O_3, etc. are used as photoanode materials [13-14]. Among them, SnO has a fast electron migration rate, which allows light to more quickly incident electrons on the conductive substrate. It has a high bandgap and does not produce oxidation pores under ultraviolet light, which can reduce the decomposition of dyes to a certain extent and improve the durability of DSSCs; SnO, the photovoltaic performance is poor, which can be solved by doping a certain material such as AI to form a barrier layer [15]. Nb2O5 is an n-type semiconductor material with a high conduction band edge, stable chemical properties, and increased output voltage and PCE positive conduction band edge position [16-17], Tungsten in WO is a transition element that is chemically stable under harsh conditions such as strong acid environments, with a band gap of approximately 2.6-3.1eV [18], The nanotubes made of WO have strong photocatalytic activity [19].

5. CONCLUSION

Power generation materials have broad development prospects in the field of new energy. Through continuous research, innovation, and application, it is expected to provide strong support for achieving sustainable energy development and addressing global challenges such as climate change. This article aims to provide reference for researchers and engineers in the field of power generation materials, in order to contribute to the advancement of power generation material technology and industrial development.

REFERENCES

[1] H J Moller, Semiconductors for Solar Cells [M]. Norwo

[2] E T Livezey. Hazardous waste [N]. The Christian Science Monitor. Available, 1980-11-6.

[3] Xu Desheng. Semiconductor Refrigeration and Application Technology [M]. Shanghai: Shanghai Jiao Tong University Press, 1999.

[4] SOOTSMAN JR, CHUNG D Y, KANATZIDIS M G. New and old concepts inthermoelectric materialsU]. Angewandte Chemie International Edition, 200948(46):8616-8639.

[5] Pang Yashuai. Preparation and photoelectric properties of a novel photoanode for dye-sensitized solar cells [D]. Zhengzhou: Henan University, 2019.

[6] Najafabadi H A, Fattahi A R, Asemi M, et al. Performance enhancement of dye-

sensitized solar cells by plasma treatment of $BaSnO_3$ photoanode [J]. Journal of Alloys and Compounds, 2020, 818:152856.
[7] O'regan B, Grätzel M. A low-cost, high-efficiency solar cell based on dye-sensitized colloidal TiO_2 films [J]. Nature, 1991, 353(6346):737-740.
[8] Ikpesu J E, Iyuke S E, Daramola M, et al. Synthesis of improved dye-sensitized solar cell for renewable energy power generation [J]. Solar Energy, 2020, 206:918-934.
[9] Sharma DJha R, Kumar S. Quantum dot sensitized solar cell:recent advancesand future perspectives in photoanode [J]. Solar Energy Materials and SolarCells, 2016, 155:294-322.
[10] Parisi M L, Maranghi S, Basosi R. The evolution of the dye sensitized solar cells from Grätzel prototype to up-scaled solar applications:a life cycle assessment approach [J]. Renewable and Sustainable Energy Reviews, 2014, 39:124-138.
[11] De Marco L, Calestani D, Qualtieri A, et al. Single crystal mesoporous ZnO platelets as efficient photoanodes for sensitized solar cells [J]. Solar Energy Materials and Solar Cells, 2017, 168:227-233.
[12] Tributsch H. Dye sensitization solar cells:a critical assessment of thelearning curve [J]. Coordination Chemistry Reviews, 2004, 248(13-14):1511-1530.
[13] Raj C C, Prasanth R. A critical review of recent developments in nanomaterials for photoelectrodes in dye sensitized solar cells [J]. Journal of Power Sources, 2016, 317:120-132.
[14] Hu Q, Wu C, Cao L, et al. A novel TiO_2 nanowires/nanoparticles composite photoanode with SrO shell coating for high performance dye-sensitized solar cell [J]. Journal of Power Sources, 2013, 226:8-15.
[15] Dissanayake M, Kumari J, Senadeera G K R, et al. Low cost, platinum free counter electrode with reduced graphene oxide and polyaniline embedded SnO_2 for efficient dye sensitized solar cells [J]. Solar Energy, 2021, 230:151-165.
[16] Ou J Z, Rani R A, Ham M H, et al. Elevated temperature anodized Nb_2O_5:a photoanode material with exceptionally large photoconversion efficiencies [J]. ACS Nano, 2012, 6(5):4045-4053.
[17] Liu W, Hong C, Wang H, et al. Enhanced photovoltaic performance of fully flexible dye-sensitized solar cells based on the Nb_2O_5 coated hierarchical TiO_2 nanowire-nanosheet arrays [J]. Applied Surface Science, 2016, 364:676-685.
[18] Nath N C D, Choi S YJeong H W, et al. Stand-alone photoconversion ofcarbon dioxide on copper oxide wire arrays powered by tungstentrioxide/dye-sensitized solar cell dual absorbers [J]. Nano Energy, 2016, 25:51-59.
[19] Nikhil S K, Das A, Bhagavathiachari M, et al. Effect of aspect ratio of c-axis oriented ZnO nanorods on photoelectrochemical performance and photoconversion efficiency [J]. Optical Materials, 2021, 121:111551.

Construction and Practice of Campus Public Art Space in Vocational Colleges under the Pattern of "Great Art Education"——Taking Zibo Vocational College as an example

Yuan Ma
Zibo Vocational College, Zibo, Shandong 255314, China

Abstract: This article analyzes the connotation and significance of "great aesthetic education", and combines the design concept of the integrated comprehensive hall of Zibo Vocational College to explore the aesthetic value of campus public art space under the concept of "great aesthetic education", as well as how to form a new pattern of all-round education through the integrated comprehensive hall
Keywords: Great Art Education Campus Public Art Space Art Education Value

1. INTRODUCTION

The concept and connotation of aesthetic education have been innovated with the times. Zibo Vocational College fully implements the fundamental task of cultivating morality and talents, firmly establishes the thinking of "great aesthetic education", strives to promote the organic integration of school-based culture, revolutionary culture, traditional Chinese culture, and intangible cultural heritage into the campus public art space, constructs a "great aesthetic education" system with a new era style, explores practical paths, promotes the reform and innovation of aesthetic education in universities, and strives to form a new pattern of education that meets the needs of the times and future development.

In 1987, educational theorist Teng Chun proposed the concept of "great aesthetic education", pointing out that aesthetic education factors exist in all educational and teaching life, and aesthetic education is always present and ubiquitous.

Art education is increasingly valued in the new era. In 2020, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued the "Opinions on Strengthening and Improving the Art Education Work in Schools in the New Era" (hereinafter referred to as the "Opinions"), which made overall arrangements for strengthening and improving the art education work in schools in the new era, further enhancing the fundamental position of art education in school education. the Opinion points out that aesthetic education is an education of aesthetics, sentiment, and spirit, as well as an education that enriches imagination and cultivates innovative consciousness. It can enhance aesthetic literacy, cultivate sentiment, warm the soul, and stimulate innovation and creativity.

The concept of "great aesthetic education" has developed to today, emphasizing the integration of aesthetic education into the entire process of school education and teaching, promoting the harmonious development of students' cognition and aesthetics, and promoting their comprehensive and healthy development. It no longer focuses solely on art education, but extends to the entire educational process and space of schools. This is not only an inevitable development of aesthetic education theory, but also an inevitable development of educational practice.

Zibo Vocational College innovates the path of aesthetic education training, fully utilizes the campus public art space as the radiation power of the "second classroom" of aesthetic education, based on its own cultural advantages, creates an aesthetic education environment with local characteristics, cultivates people with aesthetic education, realizes the macro value of promoting

excellent traditional Chinese culture with beauty, and explores an aesthetic education system suitable for the characteristics of vocational colleges.

Building an integrated comprehensive art education museum with "four museums in parallel and collaborative innovation"

In 2018, Zibo Vocational College fully implemented the fundamental task of cultivating morality and talents, firmly established the "great aesthetic education" thinking, and made every effort to build an integrated comprehensive aesthetic education museum. It coordinated the layout of the school history museum, the original intention education museum, the art museum, and the Qi culture experience museum, so that school-based culture, revolutionary culture, traditional Chinese culture, and intangible cultural heritage could be organically integrated into the campus public art space, realizing the transformation of aesthetic education practice from classroom to extracurricular, from static flat description to dynamic three-dimensional display.

2. THE AESTHETIC EDUCATION CONCEPT OF SOCIALISM WITH CHINESE CHARACTERISTICS IN THE NEW ERA IS AN IMPORTANT COMPONENT - ORIGINAL ASPIRATION EDUCATION MUSEUM

Faced with the new requirements of school aesthetic education construction in the new era, by understanding the connotation and logic of the socialist aesthetic education concept with Chinese characteristics in the new era, Zibo Vocational College leads the theoretical construction of the original intention education hall with the Marxist aesthetic education concept, and carries out contemporary interpretation and aesthetic interpretation of socialist core values and revolutionary culture. Based on the laws of beauty, it plans and shapes public spaces as a whole, strengthens education and moral education in new forms of aesthetic activities such as immersive experiences and scene shaping.

Featured building. With a total area of 760 square meters, the Chuxin Education Center is divided into eight parts, namely, building the Chuxin with ideals and beliefs, arousing the Chuxin with glorious history, and tempering the Chuxin with education management. Combining multimedia acousto-optic technology, it shows the great achievements of reform and opening up, the great history of the centennial of the CPC, and the specific practice of the CPC in implementing the Chuxin mission at various historical stages.

Technology prospers the museum. the emergence of new media technology can effectively compensate for the problem of insufficient display methods. the Chuxin Education Museum has utilized digital technologies such as digital AR and VR virtual display to create multiple immersive experience areas, including VR red experience area, red viewing area, and Zibo red resource VR panoramic "Chuxin Map".

3. THE EMBODIMENT OF SCHOOL SPIRIT AND CULTURE IN THE CAMPUS PUBLIC ART SPACE - SCHOOL HISTORY MUSEUM

The school history museum is a venue for restoring the historical appearance of a school, displaying the development history of the school, and showcasing the process of running a school. It is also an important place to deeply explore the inner theme and spirit of a school's construction and development. the school history museum in the integrated comprehensive art education hall has a building area of 334 square meters, with a functional layout of "one main line, five chapters, and eight sections", showcasing the exploration path of art education practice in vocational colleges. Through pictures, physical objects, and modern exhibition techniques, we showcase the struggle process of generations of Zizhi workers in practicing the school motto of "Only hard work is the best experience of life value". At the same time, the school history museum integrates ideological and political education with educational philosophy, educational vision, school traditions, school culture and appearance into the construction plan. Through the implicit communication of the exhibition environment, it integrates beauty into the museum, cultivates people through the museum, and silently improves the penetration and effectiveness of aesthetic education, making every individual student

living in the school positive and enterprising.

4. APPLICATION OF EXCELLENT TRADITIONAL CHINESE CULTURE IN CAMPUS PUBLIC ART SPACE - QI CULTURAL EXPERIENCE HALL, ART MUSEUM

To promote and popularize excellent traditional Chinese culture to all teachers, students, and the whole society, cultivate the spirit of craftsmanship among vocational college students, and carefully create a distinctive campus cultural brand of "local craftsmanship".

The Qi Culture Experience Hall is a practical path for schools to explore the integration of Qi culture into ideological and political education. By deeply exploring the educational elements of craftsmanship, labor, and vocational education contained in Qi culture, it cultivates a cultural fertile ground and spiritual home for the growth of high-quality technical and skilled talents. the exhibition hall covers an area of over 400 square meters and consists of five sections: the map of Qi territory, the introduction of Qi culture, historical figures of Qi, Jixia Academy and Mr. Jixia, and the Qi culture experience area. the Qi culture experience area is an important activity area for teachers and students to immerse themselves in excellent traditional culture. Teachers and students can personally experience the charm of excellent traditional culture and consciously practice the virtues of excellent traditional culture by participating in activities such as classic recitation, cuju performance, situational drama appreciation, and "three sentences and a half" explanation. With its unique artistic charm, it permeates the hearts of students and plays an important role in cultivating new talents with craftsmanship, labor spirit, and model worker spirit.

The art museum displays a variety of intangible cultural heritage artworks such as ceramic paintings, ancient glass, interior paintings, blue printed fabrics, and cloth tigers, guiding students to perceive, experience, and think about China's aesthetic culture and visual experience; At the same time, representative inheritors of intangible cultural heritage will be hired to carry out the "Famous Masters Enter Campus" activity, regularly providing teaching guidance, lectures, and on-site demonstrations in the museum, allowing students to experience traditional culture up close, forming new vocational education characteristics, and innovating to create a new pattern of intangible cultural heritage education that is deeply popularized and culturally educated. This is an important attempt to construct a discourse system for intangible cultural heritage and an important means of protecting intangible cultural heritage.

The school relies on the integrated comprehensive art education museum to carry out a series of multi-level and diversified art education practice activities. the exhibition hall undertakes the task of on-site teaching of ideological and political courses, using the power of the environment to infect, touch, and guide people; Organize various party branches to hold characteristic themed party day activities at the Chuxin Education Center; the Qi Culture Experience Center continues to deepen traditional culture classes such as "Jixia Tea House" and "Jixia Story Collection", allowing more students to participate in the dissemination of excellent traditional Chinese culture.

A good spatial environment can educate people with intangible power, and the campus public art space, as the best venue for reflecting and cultivating beauty, has become an important component of the "Great Art Education" pattern. Zibo Vocational College promotes the extension of campus public art spaces to aesthetic education values, cultivating skilled craftsmen who pursue noble aesthetics and inheritors of excellent traditional culture.

REFERENCE

[1] Lu Xiaobo: Building a New Pattern of Education Guided by "Great Art Education" [J]. 2021(12):17-19.

[2] Liu Kun: Research on Public Art on University Campus - Taking Dalian University of Technology as an Example [D], Dalian University of Technology, 2018.

Relying on Campus Culture to Promote the Construction of Brand Activities of College Student Party Branches

Yu Meng
Zibo Vocational Institute, Zibo, Shangdong 255300, China

Absrtact: the college student party branch is an important front of ideological and political education, the college student party branch brand-building and campus culture, give full play to the role of education, effectively improve the level of party building at the grass-roots level in colleges and universities. This article will discuss the university student party branch brand construction process existence question, and proposes the realization way.

Key Words: Campus Culture, university, Student Party branch, brand construction

1. SIGNIFICANCE OF BRAND CONSTRUCTION OF COLLEGE STUDENT PARTY BRANCH

For the word “Brand”, it comes from the economic field, mainly is the excellent commodity name and trademark in the consumer' s mind, which contains many factors, such as good quality, multiple values, strong influence, unique packaging and so on. the branding of the party branch construction of college students is mainly based on the current situation and characteristics of the party building work in colleges and universities, constantly looking for the rules of the party building work, and formulating innovative methods and mechanisms of the party building work. In the course of work, we should innovate the working mode of the college student party branch, introduce the brand idea, and fully integrate the actual characteristics of the college student party branch, innovative working methods to meet the requirements of party building in the new era. Through has the model function to be strong, the influence radiation far brand activity, promotes the party construction to lead, the mutual fusion promotes mutually.

The General Secretary once proposed that strengthening the Party's leadership over colleges and universities and strengthening and improving the Party building in colleges and universities are the fundamental guarantee for the success of socialist universities with Chinese characteristics. Colleges and universities in promoting the scale expansion to the development of the connotation construction mode transformation process, college students party branch work more and more attention, the party education is more and more become an important force in colleges and universities, also requires the party education must be integrated into three whole education "big education" education system, so as to give full play to the educational role of the party construction in colleges and universities.

2. THE ROLE OF CAMPUS CULTURE IN THE PROCESS OF BRAND-BUILDING OF COLLEGE STUDENTS PARTY BRANCHES

the university student party branch is the most basic party organization in colleges and universities. Student party branch can effectively organize and promote the construction of campus culture. With the development of the socialist market economy, the change of social life and ideas, influence college students, college students' spiritual and cultural life gradually diversified trend, in the new situation, the universities campus culture construction must always adhere to the development direction of socialist advanced culture, guide the students to set up the correct world outlook, the outlook on life and values, meet the cultural needs of the broad masses of students. the party branch of college students takes the scientific outlook on development as the ideological guide, practices the

fundamental purpose of serving the people wholeheartedly of the party, and leads the direction of campus culture construction. College student party members can inherit and carry forward the spirit of the university, grasp the development direction of campus advanced culture construction, and lead other college students to jointly build campus advanced culture.

The university student Party branch is an important carrier of campus culture construction. the party branch of college students is to serve the people wholeheartedly for the purpose, understand the thoughts of the majority of students, timely discover the practical difficulties and problems they encounter in life, reflect their opinions and suggestions, is the bridge and link between the party organization of colleges and universities and the majority of students. the student party branch closely contacts and serves the majority of students, help students solve practical difficulties, set a good example for college students, so that college students party members and the majority of students can internalize the service concept in the heart, and contribute their own strength to the construction of campus culture. the party branch of college students organizes rich and colorful activities to create a service atmosphere, shape the service brand, give full play to the vanguard role and enthusiasm of college student party members in the activities, make the service spirit become a value choice for college student party members, and lead other college students to build campus culture. Under the influence of campus service culture, the incentive, normative and cohesive role of campus culture can play a better role and promote the development of other campus construction.

The construction of campus culture can create a positive cultural atmosphere, have a good guiding role, and play a unique educational function, which is consistent with the basic goal of the party branch work of students in colleges and universities, and is an important carrier and way of the party building work in colleges and universities. Therefore, in the process of promoting the brand construction of college student party branch, making full use of campus culture will promote the practical implementation of the goal of party building work in colleges and universities.

3. PROBLEMS EXISTING IN THE BRAND CONSTRUCTION OF COLLEGE STUDENT PARTY BRANCH

The team construction of the student Party branch is not sound. the student party branch is established for a short time, the high-quality work team construction is insufficient, the number of full-time party building staff is difficult to meet the actual needs of the current work, most of the staff in the actual work of several jobs. the professional and efficient construction of the team is weakened. the large number of part-time jobs increases the instability of this team, and it is difficult to carry out the follow-up work.

A single working mode, and a lack of innovative atmosphere In the actual process of development, the party branch of college students generally presents the characteristics of single form, lack of innovation in working mode, but also lack of clear theme and educational connotation. the activities of organizing life mainly take the form of document reading and meeting. the attraction to the majority of teachers and student party members is not strong, the education management effect is not good, the function of the Party organization is not well played. This also leads to the grass-roots party building work is difficult to effectively carry out, the party building work vitality is insufficient. Party lessons and training content lack of targeted, not out of the book content, the attraction is obviously insufficient, it is difficult to stimulate the participation of teachers and students.

Insufficient research and theoretical support of party building brand construction the brand construction of the university student Party branch work needs a certain time of precipitation, which cannot be accomplished overnight. It needs forward-looking planning, theoretical support, after a long time of accumulation and has a certain influence, so as to be widely recognized by the school teachers and students, the masses and the society. Lack of in-depth research on the party building brand construction goals, models, strategies and other theoretical research. Scientific nature is not strong, the lack of system restricts the process of the party building brand

construction.

4. RELYING ON CAMPUS CULTURE TO PROMOTE THE CONSTRUCTION OF COLLEGE STUDENT PARTY BRANCH BRAND ACTIVITIES TO REALIZE THE PATH

give full play to the role of the student party branch battle fortress and the vanguard role of party members In his remarks, General Secretary Xi clearly stated that "All Party members should strengthen their awareness of the Party and bear in mind that their first identity is a Communist Party member and their first duty is to work for the Party. "Strengthen the responsibility consciousness of teachers, students and party members, and bear in mind their own responsibilities and missions. Fully realize the role of teachers and students and party members in the process of campus culture construction. Party organization in the process of practical work should also make full use of the outstanding party members and the party activists in the vanguard role in the process of campus culture construction, actively spread the positive energy, effectively mobilize the enthusiasm of college students to actively participate in the campus culture, to improve campus culture education function coverage, to promote the grassroots party construction brand construction to provide favorable environment support.

Deepen the connotation of campus culture and broaden the carrier of party building work "In the process of brand construction of college student Party branches, we should fully realize the fit between campus culture and party building work in the mission of cultural education and traditional culture inheritance under the background of the new media era. Strengthen the joint construction of teachers' party branch and student party branch, encourage school, enterprise and local party branch to jointly carry out corresponding activities. Fully combining with the characteristics of their own disciplines, with teachers 'scientific research projects as a platform, college students' science and technology innovation studio as the support, the establishment of a perfect "tutorial system" training mode, to provide favorable conditions for promoting the brand construction of the university student Party branch support. Through the implementation of the inheritance of high-quality campus culture, broaden the carrier breadth of grassroots party building work in colleges and universities. In the actual work process, the party branch of college students should pay attention to making full use of the advantages of new media technology, build a publicity platform relying on new media technology, constantly broaden the cooperative publicity mode of party building carriers in colleges and universities, create a good campus cultural atmosphere, and fully highlight the educational function of campus culture and grass-roots party building work.

Guided by the party building, relying on the campus culture, to create a new pattern of the student Party branch characteristic brand. We will follow the guidance of the Thought on Socialism with Chinese Characteristics for a New Era and foster a "1+1+4" Party building. First, to build "a pattern": the university party committee has a prominent political core position, the party branches are strong, and the vanguard role of party members is obvious. For school party construction exists between departments "solo lack of linkage into the phenomenon, give full play to the school party committee, coordinate the core of leadership, according to the principle of integrity, practicality and systematic, the party construction into the school" chess ", overall thinking, system, to create a" big party " work pattern. Second, each student party branch to build "a brand": "Party branch+characteristic brand". the characteristic brands are theoretical research, cultural communication, pursuit of belief, volunteer service and so on. the third is to build "four platforms for all party members:" Party building+network ideological and political guidance ", " Party building+college students' entrepreneurship and innovation ", " Party building+campus cultural exchange, "Party building+volunteer service", to realize the organic combination of Party building, school development and personal growth.

To sum up, relying on campus culture to promote the brand construction of college student Party branch activities is to explore a new idea of work that conforms to the law of party construction in colleges and universities

and conforms to the Times. In the actual development process, the college student party branch should give full play to the exemplary role of party members and the role of the party branch battle fortress, actively promote the combination of the work of the college student party branch and the construction of campus culture, implement the connotative development requirements, and inject vitality and vitality into the party building work.

REFERENCE

[1] Zhang Lei, Thoughts on the Focus points of Party Building for College Students in the New Era [J]. Theoretical Vision, 2020. (06).

[2] Zha Fangyong, Countermeasures to improve the Quality of Party Construction for College Students in the New Era [J]. School Party Building and Ideological Education, 2021. (12).

[3] Xue Dexiang, Thinking and Practice of Party Building for Higher Vocational Students under the training mode of "Combination of work with study" [J]. School Party building and Ideological Education, 2017. (01).

[4] Liu Hui, Zhang Ye, Promoting the Brand Building of College Students [J]. School Party Building and Ideological Education, 2017. (09).

Problems and Teaching Strategies of English Pronunciation for Higher Vocational Students

Tang Fang
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: In the process of learning English, higher vocational students often find pronunciation acquisition to be a challenging area. Influenced by the phonetic system of their native language, Mandarin, higher vocational students frequently exhibit significant differences in pronunciation, intonation, and rhythm. These differences not only affect the effectiveness of oral communication but also limit the improvement of students' overall English proficiency. This paper aims to explore the main problems of English pronunciation among higher vocational students, analyze their causes, and propose corresponding teaching strategies to help students overcome pronunciation barriers and improve their oral English skills.

Keywords: Higher Vocational Students; English Pronunciation; Problems; Teaching Strategies

1. INTRODUCTION

Pronunciation is the most basic element of language and one of the core contents of foreign language teaching. Good English pronunciation and systematic phonetic knowledge can help students memorize words by combining sound and form, while also promoting and enhancing English listening and speaking skills to achieve efficient language communication. For higher vocational students, mastering good English pronunciation is not only key to enhancing personal professional competitiveness but also a necessary condition for achieving cross-cultural communication. However, in the process of acquiring English pronunciation, higher vocational students face many problems, such as weak foundations, inaccurate pronunciation, unnatural intonation, insufficient motivation to learn, and limitations in teaching resources and environment. These problems not only affect students' oral expression and listening comprehension skills, but also restrict the improvement of their overall English proficiency. Therefore, an in-depth exploration of the challenges in the acquisition of English pronunciation among higher vocational students and the proposal of effective teaching strategies are of significant theoretical and practical value.

2. THE CURRENT SITUATION OF ENGLISH PRONUNCIATION TEACHING IN HIGHER VOCATIONAL COLLEGES

2.1 Students have a weak foundation and lack interest in learning

Most students in higher vocational colleges have an unsatisfactory English foundation from high school, with relatively weak English grades, and a lack of interest in learning English, leading to insufficient confidence. Some students started learning English late in the initial education phase, missing the optimal period for learning pronunciation, resulting in a relatively poor English foundation. Due to the long-term influence of traditional teaching methods, students find language learning and the accumulation of English knowledge dull and tedious, which makes them feel at a loss and have low enthusiasm for learning English pronunciation.

2.2 Inadequate class scheduling and imperfect teaching facilities

Many higher vocational colleges do not schedule English pronunciation courses reasonably or provide sufficient class hours, making it difficult to ensure that students fully master pronunciation knowledge and have enough practice. Some of these colleges have

inadequate teaching facilities such as pronunciation laboratories, and the software and hardware are not updated in a timely manner, which prevents teachers and students from achieving the desired teaching results.

2.3 The professional level of teachers needs improvement

Many English teachers in higher vocational colleges still use traditional "cramming" teaching methods, delivering knowledge unilaterally without sufficient interaction with students or attention to their learning progress. At the same time, teachers often focus on teaching phonemes while neglecting the teaching of speech flow, making it difficult for students to develop fluent oral expression. Some teachers themselves have non-standard English pronunciation or even regional accents, which to some extent affects the quality of teaching.

3. MAIN PROBLEMS OF ENGLISH PRONUNCIATION FOR HIGHER VOCATIONAL STUDENTS

3.1 Problems with Vowel Pronunciation

Firstly, long and short vowels are confused. Students often confuse long and short vowels, such as live /liv/ and leave /li:v/, read /ri:d/ and rid /rɪd/, and /u/ and /u:/ are frequently mistaken, such as fool /fu:l/ and full /fʊl/. This confusion leads to inaccurate word pronunciation, which in turn affects the understanding and expression of entire sentences.

Secondly, vowel pronunciation is not accurate. Due to the relatively small mouth shape and limited lip movements in Mandarin pronunciation, some students do not open their mouths wide enough or do not pronounce vowels for a long enough duration when producing English vowels. Therefore, when pronouncing English vowels with a larger mouth opening, such as /a/ and /æ/, Chinese students typically do not pronounce them accurately enough.

Thirdly, vowel substitution occurs. Students may use Mandarin vowels to replace English vowels, such as using “a” to replace /a:/, using “i” to replace /i:/, and so on. This substitution results in non-native English pronunciation. For example, the pronunciation of diphthongs like /ai/, /ei/, and /au/ in Mandarin and English are similar but distinct. the lack of a sliding process in the mouth shape changes leads to unnatural-sounding pronunciation. It is precisely because many Chinese students do not distinguish between similar-sounding vowels in these two languages and use Mandarin vowels to replace similar English vowels that their pronunciation sounds unnatural.

3.2 Problems with Consonant Pronunciation

Firstly, Mandarin does not have unique English consonants. the consonant system in Mandarin is relatively simple, while English has a wide variety of consonants with diverse ways of pronunciation. Students often find it difficult or make mistakes when pronouncing certain consonants, such as /θ/, /ð/, /r/, /v/, etc., because they lack the corresponding phonetic mechanisms. Students often replace these sounds with the closest sounds in Mandarin or their local dialects.

Secondly, inaccurate consonant pronunciation. Some students from southern provinces have difficulty distinguishing between /n/ and /m/, /f/ and /h/, while students from northern provinces have trouble distinguishing between /s/ and /ʃ/. Students do not pay attention to the plural forms of nouns, the past tense, past participle, and the comparative and superlative forms of adjectives, resulting in unclear pronunciation at the ends of words. Additionally, students often have difficulty pronouncing complex consonants such as affricates and fricatives.

Thirdly, adding vowels after consonants. Since all words in Mandarin end with a vowel, some learners habitually add a vowel after consonant-final words, such as pronouncing /put/ with an added /ə/ as /putə/.

Fourthly, inaccurate pronunciation of consonant clusters: Consonant clusters are a difficult point in English pronunciation. Students often have inaccurate pronunciation due to poor coordination of the speech organs, such as /gr/, /br/, /sp/, /st/, /str/, etc.

3.3 Improper Control of Intonation and Rhythm

There are significant differences between English and Mandarin in terms of intonation and rhythm patterns. English is a tonal language that typically descends in pitch from the stressed syllable in a sentence to the last stressed syllable, which determines the

intonation at the end of the sentence. Mandarin is a tonal language where each character in a sentence has a fixed tone, and the intonation of the sentence is only adjusted at the last character of the sentence. the pitch fluctuations of the entire sentence are not significant, and the range of pitch changes is not wide. When speaking English, Chinese students often find it difficult to accurately grasp the intonation changes in English, resulting in a lack of natural fluency in their oral expression. In addition, the rhythm features of English, such as stress, weak forms, and linking, are also difficulties that students need to overcome.

4. ANALYSIS OF CAUSES

4.1 Negative Transfer of the Mother Tongue

Negative transfer of the mother tongue is a common problem in the acquisition of English pronunciation by Chinese students. Due to the differences in the phonetic systems of Mandarin and English, students are easily influenced by their native language pronunciation habits when learning English pronunciation, leading to pronunciation deviations.

4.2 Problems in the First Stage of Language Learning

Many higher vocational students have not received systematic phonetic knowledge education and lack a solid grasp of English phonetic knowledge. the level of teachers responsible for the first stage of language learning is uneven, and with large class sizes in the foundational education stage, teachers are unable to carefully demonstrate and correct the pronunciation of every student. Due to the incorrect pronunciation acquired during the first stage and the long-term repetition of errors, incorrect pronunciation becomes deeply ingrained, making it difficult to correct later on.

4.3 Undiversified Teaching Method

Traditional English pronunciation teaching often adopts mechanical imitation and repetitive practice methods, lacking attention to individual differences among students and innovation in teaching strategies. This undiversified teaching method fails to stimulate students' interest and enthusiasm for learning and is not conducive to the comprehensive development of students' phonetic abilities.

4.4 Lack of Effective Input

In China, English is learned as a foreign language, and students often lack sufficient English phonetic input environments. Classroom teaching time is limited, and the focus is often on grammar and vocabulary teaching, with pronunciation teaching being neglected. Moreover, although there are abundant extracurricular English resources, students often find it difficult to obtain high-quality phonetic input materials.

4.5 Cultural Barriers

Many students lack a good understanding of English pronunciation. Some students believe their pronunciation is standard and do not need further improvement. Other students believe that as long as they read and practice more, their oral skills will improve. Although many students consider their pronunciation standard, they have little understanding of the culture of English-speaking countries, which can lead to difficulties in expressing what they want to say when speaking. Due to significant historical and cultural differences between English-speaking countries and China, cultural barriers can arise during the learning process. If these cultural barriers are not effectively addressed, they can negatively impact students' English learning. If teachers cannot promptly identify these issues, students may encounter problems during oral practice that cannot be resolved in a timely manner. Therefore, teachers need to take effective measures to help students overcome cultural barriers and promote the improvement of their English oral skills.

5. TEACHING STRATEGIES

5.1 Strengthen Basic Pronunciation Training

In response to the difficulties students encounter in English pronunciation acquisition, teachers should strengthen basic pronunciation training, including exercises for vowels and consonants, and imitation of intonation and rhythm. Teachers should carefully analyze students' pronunciation errors and the influence of their mother tongue on them, conduct a thorough comparison of English and Chinese phonetics, help students compare similar sounds in the two languages, carefully examine the phonetic organ

diagrams, identify the correct articulation points, and master the methods of pronunciation. On the basis of practicing individual sounds, teachers should also help students systematically learn phonetic skills and sound changes in speech flow and conduct targeted exercises. Through repeated practice and correction, teachers can help students develop correct pronunciation habits and phonetic perception abilities.

5.2 Create a Language Learning Environment

Teachers should actively create an English pronunciation learning environment, such as using English songs, movies, and radio as resources to provide students with rich phonetic input materials. At the same time, encourage students to participate in activities like English corners and speech contests to improve their oral expression and phonetic application abilities.

5.3 Adopt Diverse Teaching Methods

Teachers should adopt diverse teaching methods, such as task-based teaching, cooperative learning, and situational teaching, to stimulate students' interest and enthusiasm for learning. Improve the fun of English pronunciation practice through learning to sing English songs, doing English dubbing, and other methods. By designing challenging oral tasks, organizing group discussions, and role-playing activities, students can learn and master English pronunciation knowledge in practice.

5.4 Introduce Modern Technology Means

With the development of technology, modern technology means provide new possibilities for English pronunciation teaching. Teachers can use speech recognition software and online speech courses to provide students with personalized speech assessment and feedback services. At the same time, by recording and playing back their own pronunciation recordings, students can more intuitively understand their pronunciation problems and make targeted improvements.

6. CONCLUSION

The challenges in English phonetic acquisition for vocational students are multifaceted, but by strengthening basic phonetic training, creating language environments, employing diverse teaching methods, and integrating modern technological means, we can help students overcome phonetic barriers and improve their spoken English. In the future, with the continuous advancement of educational concepts and technology, there is good reason to believe that the English phonetic abilities of vocational students will be further enhanced.

REFERENCES

[1] Hong Ming. the Influence of Native Language Negative Transfer on English Phonetics Acquisition Due to English-Chinese Phonological Differences [J]. Journal of Zhejiang Normal University (Social Sciences), 2004, 29(2):108-111.

[2] Luo Tingfeng. Common Problems and Countermeasures in Pronunciation of Chinese Students [J]. Overseas English (Part A), 2020(9):22-23.

[3] Liang Wei, Tang Jiao. Analysis of Current Situation of Oral English Ability in College and Research on Educational Reform Ideas [J]. Modern Vocational Education, 2021(36):174-175.

[4] Cen Qiuyan. Analysis of English Pronunciation Errors and Teaching Countermeasures for Freshmen of English Major in Higher Vocational Education [J]. Journal of Suzhou Education Institute, 2023, 26(6):47-52, 72.

Analysis on The Structural Change of Japanese Automobile Industry Under the Wave of Electric Power

Wang Han
Zibo Vocational College, Shandong, China

Abstract: the Japanese automotive industry has long relied on vertical transactions and "keiretsu" relationships, wherein component manufacturers and automakers collaborate closely in research and development. However, with the global shift towards electrification and the push for environmental policies, Japan's automotive sector is undergoing a structural transformation. the widespread adoption of electric vehicles (EVs) has significantly reduced the number of parts needed for traditional internal combustion engine vehicles, prompting a shift from the traditional vertically integrated model to a more horizontally specialized division of labor. Automakers are deepening their collaboration with companies that possess expertise in electrification technologies, such as batteries and motors, while also engaging in more cross-sector partnerships in emerging fields like autonomous driving and shared mobility services. the Japanese government is actively supporting the industry's electrification efforts through policy initiatives.

Keywords: Japanese Automotive Industry, Keiretsu, Electric Vehicles, Electrification Transition, Policy Support

1. STRUCTURE OF JAPAN'S AUTOMOTIVE INDUSTRY

After World War II, Japan faced the challenge of rebuilding its economy, and the automotive industry played a key role in this recovery. In the 1950s and 1960s, domestic car manufacturers such as Toyota, Nissan, and Honda gradually became major players by producing small, fuel-efficient vehicles that met both domestic and international demand. the Japanese government, particularly through the Ministry of International Trade and Industry (MITI), provided critical support in promoting collaboration between automakers and suppliers through the "keiretsu" system. the oil crisis of the 1970s further accelerated Japan's shift towards more fuel-efficient cars, enabling Japanese automakers to dominate the global market as fuel prices surged. This period laid the foundation for the close vertical integration between automakers and parts suppliers, which came to define the keiretsu system. [1]

Japan's automotive industry has long been characterized by close vertical transactions and technical cooperation between automakers and parts suppliers, a model commonly referred to as the "keiretsu. " In this structure, parts suppliers are often closely linked to automakers through equity ownership or other forms of capital ties. This vertical keiretsu structure gradually developed during Japan's period of rapid economic growth, with the aim of responding to international competition, maintaining high economic growth, and ensuring the global competitiveness of Japan's automotive industry. [2]

In the keiretsu relationship, automakers typically become involved early in the development phase of new vehicle parts to ensure that parts suppliers can provide stable and long-term support for future vehicle production. This close cooperation allows automakers to differentiate their products from other brands at the component level, as parts are often designed to be specific to a particular brand's models. This early involvement in the development process is known as "advanced development. " Through this collaborative approach, both parts suppliers and automakers not only build long-term trust in their business relationships but also accumulate significant technical expertise and knowledge through joint development efforts. [3] [4]

Konno (2007a) conducted a study on the patents filed by nine Japanese automakers, as disclosed by the Japan Patent Office, from 1993 to 2004. the results showed that the number of patents filed by these nine companies generally increased over the 12-year period, and joint patent applications with other companies also rose. An investigation into the partners involved in these joint patent applications revealed that many of the companies co-developing advanced technologies with automakers were keiretsu suppliers. For example, Toyota collaborated with Denso, Toyota Central R&D Labs, and Aisin Seiki; Nissan worked with Hitachi, among others. [5]

However, as Japan's automotive industry shifts toward technology-driven models such as electrification and autonomous driving, a new trend has emerged in which parts suppliers play a central role in the horizontal division of production and development. This shift marks a significant change from the traditional vertical keiretsu system to a more flexible and horizontally integrated structure. Notably, this system allows automakers to collaborate with a broader range of specialized suppliers, including those from the tech industry, which are now crucial to the development of electric vehicles and smart cars. [6] In this regard, Atsuo Takenaka (2023) conducted a data analysis of three aspects: independent research patents, joint patents between companies, and international joint patent applications by Toyota, Honda, and Nissan between 2014 and 2016. By analyzing the number of patent applications and their focus areas, it was found that both the independent R&D efforts of automakers and joint R&D activities between companies were primarily centered on common technological fields. In contrast, international joint R&D efforts involved different fields and were aimed at acquiring core technologies. [7]

2. THE IMPACT OF THE ELECTRIC WAVE ON JAPAN'S AUTOMOTIVE INDUSTRYT

In recent years, with the continuous advancement of global environmental policies, electric vehicle manufacturers such as Tesla have rapidly risen, driving the wave of automotive electrification. In response to the growing global demand for zero-emission vehicles and to maintain competitiveness, traditional automakers have significantly increased their investment in electric vehicle technology research and development. According to *Nikkei*, starting in 2021, the R&D spending of Japan's six major automakers grew by 7% year-on-year, reaching a total of 2.887 trillion yen. [8]

However, as automotive companies develop electric vehicle technologies independently, they still face significant financial pressures and technological risks. This uncertainty is prompting changes in the traditional vertical keiretsu structure. Consequently, improving the speed and quality of product development projects while reducing development costs has become essential. Additionally, the amount of knowledge required to research new products and services is rapidly increasing. It is no longer realistic for companies to develop all products on their own; therefore, collaborating with other firms has become a necessary path to achieve competitive success. As a result, many automakers are choosing to partner with companies that possess battery technologies, such as CATL, Panasonic, and Toshiba, to reduce R&D uncertainties. Atsuo Takenaka (2023) also mentioned that the frequency of international collaborative R&D efforts has increased. [9]

On the other hand, the number of components required for electric vehicles is significantly lower compared to traditional gasoline vehicles. According to estimates from the Japan Local Economy Comprehensive Research Institute, out of the approximately 30, 000 parts needed for gasoline cars, 25% to 40% of those parts are no longer necessary in electric vehicles. [10]. This means that many companies that were originally focused on producing components related to internal combustion engines will lose their market. the traditional vertical keiretsu structure is being forced to restructure in order to adapt to the new market environment. [11] At the same time, research from Japan's Ministry of Economy, Trade and Industry has pointed out that the structure of electric vehicles has changed significantly compared to traditional gasoline cars. the core of electric vehicles includes three key areas: control systems, body structure and sales, and the powertrain.

the power system, consisting of batteries, electric motors, and power semiconductors, represents the electrification aspect. Compared to the complex engines and associated components of gasoline vehicles, electric cars primarily require batteries and motors, which simplifies the manufacturing process and lowers the entry barriers for new participants. As a result, the production of electric vehicles has become more streamlined, reducing the barriers to entry in the industry. [12]

In addition, the rise of electric vehicles has not only led to structural changes but has also promoted the integration of automotive control systems with emerging industries such as information technology and autonomous driving. This integration is commonly referred to as CASE, an acronym for Connected, Autonomous, Shared & Services, and Electric. CASE paves the way for emerging sectors like autonomous vehicles, connected cars, and shared mobility services, transforming the landscape of the automotive industry and making it increasingly common for non-automotive manufacturers to enter this field.

As important frontiers, smart cars, connected vehicles, and autonomous driving technologies have seen significant R&D investment from Japanese automakers, who frequently collaborate with information and communication technology companies to maintain competitiveness. For example, Toyota's partnership with Nvidia on AI-driven autonomous driving technology, and Honda's collaboration with SoftBank on connected car services, highlight the growing intersection between the automotive and tech industries. However, Japan faces fierce competition from global tech giants like Google and Apple, which are also making inroads into the autonomous vehicle sector. Huawei has created the Seres electric vehicle brand, which incorporates the HUAWEI ADS advanced intelligent driving system, further advancing this cross-industry integration and emphasizing the increasing overlap between the automotive and technology sectors. [13]

3. RESPONSE STRATEGIES OF JAPAN'S SUTOMOTIVE INDUSTRY

In response to the transformation of the industry structure, Japanese automakers are adopting various strategies. First, they are choosing to collaborate with parts manufacturers that have technological advantages in areas such as batteries and motors to acquire advanced electrification technologies. In 2020, Toyota and Panasonic jointly established a new company focused on automotive batteries, serving as a prime example of industry collaboration and highlighting the importance of developing competitive electric vehicles together.

At the same time, the traditional vertical keiretsu structure is undergoing adjustments. Many automakers are beginning to collaborate with parts suppliers that do not have capital ties, especially those with technological strengths in electrification and autonomous driving. For instance, several keiretsu companies of Honda, such as Showa, Nissin Kogyo, and Keihin Corporation, consolidated in 2020 to form a new cooperative model with Hitachi Astemo, promoting a shift towards a horizontal division of labor within the industry. In this model, the development, manufacturing, and sales of core product components are managed in-house, while other parts are outsourced to external companies.

This approach allows automakers to maintain control over the development, manufacturing, and sales of core components while outsourcing non-core elements to external firms. Additionally, as companies from industries such as autonomous driving and shared services enter the market, automakers are not only collaborating with relevant battery companies for production and R&D but also partnering with these new entrants. [11] [14]

In addition to technological collaboration, the transformation of the automotive industry also relies on government support. the Japanese government has implemented several policies to promote the electrification of vehicles, including strengthening fuel efficiency standards, encouraging public sector procurement of electric vehicles, expanding the infrastructure for charging and hydrogen stations, and providing subsidies for purchasing new cars as well as incentives for replacing old vehicles. These policies not only accelerate the adoption of electric vehicles but also provide a supportive framework for the

transformation of traditional automakers. [15] As part of their efforts to address the growing concerns about climate change, Japanese automakers have taken significant measures to reduce their carbon footprints and promote sustainable transportation. Toyota has committed to achieving zero emissions by 2050, reflecting the broader efforts within the industry to meet global environmental goals. In addition to producing electric vehicles, Japanese automakers are also exploring hydrogen fuel cell vehicles (FCVs) as an alternative solution. Moreover, as automakers strive to enhance environmental sustainability, initiatives focused on battery recycling and waste reduction in vehicle production have become increasingly prominent.

Although the government has made significant efforts, the current reality is that traditional gasoline-powered vehicles still dominate the market in the face of an electrified future. In the medium to short term, hybrid and plug-in hybrid electric vehicles (PHEVs) may serve as a transitional solution, particularly in regions where electric vehicle infrastructure, such as charging stations, remains underdeveloped. In 2024, researchers Kakushima and Kikuchi assessed the policies regarding the establishment of power supply facilities and the promotion of battery electric vehicles (BEVs). They concluded that under the current subsidy policies, operating power supply initiatives will be challenging.

As a result, Japanese automakers are striving to maintain a balance between producing traditional vehicles and increasing the output of electric vehicles. However, in 2024, the sales of battery electric vehicles (BEVs) accounted for only 1.6% of new car sales, while plug-in hybrid electric vehicles (PHEVs) represented 1%. Meanwhile, gasoline vehicles still made up 46% of sales. Additionally, automakers must address consumer concerns regarding the range and charging time of electric vehicles, as these issues remain significant barriers to widespread adoption. [16] [17]

4. CONCLUSION

The Japanese automotive industry is undergoing a profound transformation. the traditional vertical keiretsu structure is gradually collapsing in the wake of the electrification wave, giving rise to a new production model centered on electrification technologies and guided by horizontal division of labor. In this process, technological collaboration between companies, cross-industry integration, and government policy support are all driving the Japanese automotive sector toward a more flexible and open future.

While there are many practical challenges to face, both the government and businesses are working hard to address these issues. In the future, emerging technologies and business models related to electrification, autonomous driving, and shared services will continue to reshape the global automotive landscape.

REFERENCES

[1] Kamiyama, Kunio. (2016). "The Establishment and Overseas Expansion of the Japanese Automobile Industry in the Pre-war Period (Part 1). " Journal of the Josai Economic Society, 37, 33-64.

[2] Kiyoshima, Ichiro. (2021). "Reorganization of the Automotive Parts Industry Surrounding Electrification and Autonomous Driving: the Transformation of Japanese Production Methods in a Once-in-a-Century Shift. " Economic Studies (Chuo University), Volume 61, Combined Issues 3 & 4.

[3] Xiaotian Yang (2022) Vertical Coopetition: Effect of Supplier Relationship Management Strategies on Supplier Involvement in New Product Development IEEE Transactions on Engineering Management Page(s):1-10

[4] Asanuma, Banri. (March 1984). "The Structure of Parts Transactions in Japan: A Case Study of the Automotive Industry. " Economic Studies, Volume 133, Issue 3.

[5] Konno, Yoshinori. (2007). "Enhancement of Relational Skills and Deepening of Advanced Technology Development in the Japanese Automobile Industry. " Hitotsubashi Business Review, Volume 55, Issue 1.

[6] Takeishi, Akira, Fujimoto, Takahiro, and Gu, Seong-Hwan. (2001). "Modularization in the Automotive Industry: A Complex Hierarchy of Products, Production, and Procurement Systems. " In Business Architecture, edited by Takahiro Fujimoto, Akira Takeishi, and Aoshima Yaiichi, Yuhikaku Publishing.

[7] Takenaka, Atsuo. (2023). "Acquisition of New Technologies Through Joint Research and Development: An Analysis of the Automotive Industry. " Hikone Ronso, (No. 434), 48-61.
[8] Nikkei, "Japan's R&D Expenses for Cars Reach 2.8 Trillion Yen. "
URL:https://www. nikkei. com/article/DGKKZO72635050W1A600C2EA2000/
[9] Itagaki, Akira. (2018). "The Role of Joint Research in the Development of New Automotive Technologies: Electric Vehicle Development and Large-scale Industrial Technology R&D Systems. "
[10] Local Economy Comprehensive Research Institute, "EV Shift and Local Automotive Parts Manufacturing Industry".
[11] Kobayashi, Tetsuya. (2022). "Study on 'Disruptive Innovation' in the Automotive Industry: Focusing on Electric Vehicles. " Machine Industry Promotion Association Economic Research Institute, Issue 28.
[12] Ministry of Economy, Trade and Industry, "Directions for Research and Development and Social Implementation of Next-Generation Storage Batteries and Motors. "
URL:https://www. meti. go. jp/shingikai/sankoshin/green_innovation/industrial_restructuring/pdf/005_03_00. pdf
[13] Nikken, "What is CASE? the Significance for the Automotive Industry, Differences with MaaS, Manufacturer Strategies, and Case Studies. "
URL:https://www. nikken-totalsourcing. jp/business/tsunagu/column/553/
[14] Kobayashi, Nobuaki. (2018). "An Empirical Study of R&D Activities Among Major Automobile Manufacturers: Technology Domains, Keiretsu, and Industrial Clusters. " Economic Studies, Volume 71, Issue 4, pp. 59-92.
[15] Ministry of Economy, Trade and Industry: Research and Development and Demonstration Projects for Advanced Autonomous Driving Systems Aimed at Social Implementation — A Study on the Transition of the Automotive Parts Industry.
[16] Kakushima, Rika, Kikuchi, Hiroki, & Fukuda, Atsushi. (2024). "A Study on the Evaluation of Electric Vehicle Promotion Policies in Japan. " System Dynamics, 21, 17-33.

Practice of Pharmacy Curriculum Reform with the Goal of High-quality Nurturing People

Limei Wang
Zibo Vocational Institute, Zibo, Shandong, 255300, China

Abstract: The cultivation objectives of pharmacy include three aspects of pharmacy ethics, pharmacy regulations and pharmacy technology, how to ensure the implementation of the cultivation objectives to the training of talents, to achieve the goal of high-quality education needs to be reformed and practiced in the curriculum. This practice improves the training quality of pharmacy through effective enhancement of the internal motivation of learning and learning, organic integration of curriculum ideology and politics, and integration of innovative ability and digital ability training in pharmacy practice teaching.
Keywords: Pharmacy, Curriculum Reform, Training Quality

1. INTRODUCTION.

The pharmacy profession mainly cultivates high-quality professionals related to drug research and development, production, distribution, management, quality control and pharmacy services for the society. Driven by the huge population base and aging trend, the improvement of people's living standard and the demand for medication, the national strategic security of drugs, and the rapid growth of the pharmaceutical industry, pharmacy professionals play an increasingly important role in the economic construction and social life. the new era requires pharmacy professionals not only to master excellent professional knowledge and skills, but also to have a sense of social responsibility and professional ethics of "life depends on health", and the need to have dialectical thinking, the ability to distinguish between good and evil [1].

Pharmacy is one of the core courses of the pharmacy program, is a study of the basic theory of pharmaceutical preparations, prescription design, production process and rational application of a comprehensive application of science, the knowledge involves the design theory of pharmaceutical preparations, prescription process, production technology, quality control and rational application, in the research and development of new drugs, drug production, distribution and management, clinical application of each link of the pharmaceutical industry are critical [2].

Currently the overall objective of pharmacy through the study of this course, so that students have the design of drug dosage forms and preparations, preparation, production and quality control and other aspects of the theory and skills; and to engage in the rational use of clinical medication and the provision of safe, effective, stable, easy to use drugs and other work to lay the foundation. the use of medication is related to people's lives and health, pharmacy not only requires students to master professional knowledge and skills, set up a "quality of drugs" safety awareness, but also to abide by the "conscientious medicine, assured that the drug" guidelines, with a high degree of professional ethics, to achieve the virtue of medicine, Pharmaceutical regulations, pharmaceutical technology three integration.

Problems in the process of teaching pharmacy

In order to fully implement drug ethics, drug regulations, drug technology to the training of personnel, we need to fully understand the existing problems in the teaching process of pharmacy, and take effective measures to address these problems in order to ensure that the objectives of the course training to the ground, and to cultivate high-quality pharmacy professionals. I have been engaged in the teaching of pharmacy for more than ten years, combined with the development of the times and teaching experience analysis, the main problems in the current teaching process

of pharmacy are the following three points:

1.1 Insufficient internal motivation of students to learn

The main problem of the current efficient classroom is that students do not cooperate, can not be pulled, analyze the reason is that the higher vocational students have poor self-restraint, bad learning habits, for learning attitude is not serious enough, the specific manifestation of the "classroom play cell phone" to address this problem, in the current era of information technology, the process of lectures to collect the cell phone way to treat the symptoms but not the root cause, on the pharmacy teaching process, the students will not be able to learn. To address this problem, in the current era of information technology, the lecture process by collecting cell phones to treat the symptoms but not the root of the problem, the upper policy, the lower policy, and can not really solve this problem from the root, but also may trigger some of the students of the reverse psychology. How to solve this problem is the key to improve the quality of teaching, but also to achieve the core of the training objectives.

1.2 Course Civics emphasizes the form of Civics, but not the effect of Civics.

The relevance, depth and timeliness of the teaching content of "Course Civics" are not enough. the content of the course is not handled differently according to the specific specialties, and the "Course Civics" has become a simple addition of a certain course and the Civics course, and the classroom is filled with "axiomatic", "slogan" and "cliché". "cliché", not enough contact with current events, detached from the actual life of students, the effect of Civics is very poor.

1.3 the Course Assessment Index Is Not Accurately Aligned With the Training Objectives

At present, the main components of the examination mode: usual grades+theory+skills operation of the three main modules, of which the usual grades are mainly attendance, theoretical grades for the mastery of professional knowledge, skills operation is the main examination of the hands-on ability, part of the course to add the goal of the Civic Politics, but only a formal course Civic Politics, the effect of how it has not been considered. At the same time, the country has put forward the requirements of high-quality development, under the background of the development of information technology, there is an urgent need to cultivate students with the times in line with the new capabilities, such as: digital ability, thinking ability, the ability to think innovatively, the above capabilities need to be reflected in the training objectives and implementation of the corresponding assessment indicators.

2. SECOND, THE DIRECTION OF PHARMACY PROGRAM REFORM

2.1 Enhancing students' internal motivation to learn: based on socialist core values, students are guided to self-management and self-restraint to enhance learning in the classroom. Introducing self-evaluation sheets, mainly focusing on the persistent problems of classroom management: not bringing textbooks, playing with cell phones, sleeping, etc., emphasizing the importance of students' self-restraint in life, and giving full encouragement and trust to practice it in the classroom. Teachers and students work together to create an efficient classroom.

2.2 multi-channel into the course of the ideology, truly silent: due to the limited length of the classroom, while teaching knowledge and skills, but also into the course of the ideology and innovation and entrepreneurship and other elements of the time is tense, you can rely on other online ways to incorporate the course mainly rely on the new media are: online teaching platform WeChat public number, etc. constantly update the content of the teaching of the professional theoretical knowledge and the value of the guidance of an organic combination of In the process of knowledge transfer, value guidance is strengthened.

Optimize the cultivation objectives of the courses, refine the assessment indexes of the courses, and build high-level pharmacy professional skilled talents who are good at cultivating pharmacy ethics, knowing the rules of pharmacy, being good at pharmacy technology and understanding innovation. Establish a three-dimensional assessment and evaluation method combining process

assessment and final assessment with multi-dimensional assessment indexes of ideology, knowledge, skills and innovation, and introduce them to students in detail in the first class of the course, so as to guide the direction of students' efforts in the later stage.

3. THIRD, THE SPECIFIC PRACTICE OF PHARMACY TEACHING REFORM

3.1 Practice of students' good learning habit formation

For the problem of students' weak learning initiative and poor learning habits, the pharmacy course has explored the correct guidance of students' learning behavior into a part of the course assessment - self-evaluation sheet after years of practice, mainly targeting the problem of playing cell phones in class, sleeping, not taking textbooks and other common common problems that affect the efficiency of classroom listening. This classroom from 2019 onwards in the course assessment evaluation, there is a self-evaluation, the evaluator students, through the design of reasonable evaluation indexes so that students do a good job of classroom self-management, to improve the effectiveness of teaching. Through years of teaching feedback found that through the introduction of self-evaluation, 90% of the students can do a good job of self-management in the classroom, the classroom learning effect is greatly improved.

3.2 The construction of the "point line surface" combination of the program's ideological and political education system

Combined with the characteristics of the course "Pharmacy" and the teaching experience of the teachers, under the premise of fully reflecting the goal of the course and fully exploring the elements of the course, we have condensed the "point on the ideology", which is the organic integration of the ideological elements and the knowledge points, the "line on the ideology", which is the organic integration of the professional qualities and the content, and the "line on the ideology", which is the organic integration of students' learning behaviors. "and the norms of students' learning behavior and socialist core values of the organic integration of the "surface ideology", so as to build a "point, line and surface" combination of the "pharmacy" course of ideological education system. Through several years of teaching practice, the "point-line-face" combination of the "Pharmacy" course of the Civic and Political Education System has realized the objective of the course cultivation of the organic combination of knowledge transfer, professional quality training and value shaping.

3.3 Students' innovative ability and digital ability are enhanced

The course explored the cultivation of students' digital ability many years ago, replacing paper lab reports with PPT lab reports and arranging lab reports, and found that students' digital ability, logical thinking ability, expression ability and even aesthetic ability have been improved through several rounds of teaching. At the same time, this course is also exploring how to enhance students' innovative thinking. In the assessment and evaluation indexes of the course, there are value-added evaluations such as the Golden Idea Program, i. e., students are encouraged to think about their daily life in the context of the course learning, and to ask questions - to ask innovative questions - to solve the problems in the context of what they have learned. Through the implementation of this program, most students have the ability to think innovatively, and some students have achieved excellent results in innovation and entrepreneurship competitions: for example, Jiang Haoxin, a student of grade 19, raised the point that he saw a small experiment on Shake Shack that was more similar to the process of preparing drop pills, and discussed with me whether it was also a drop pill agent. We watched the video together and found that the video for the reaction between sodium alginate and calcium lactate to make popping beads, the principle of sodium alginate and calcium ions to form calcium alginate gel, and the principle of the preparation of drop pills is not the same. As a result, I will guide us to ibuprofen suspension difficult to take medication can be combined with sodium alginate and calcium lactate reaction to produce pop beads, so as to improve children's oral ibuprofen difficult to this problem, which gave birth to innovative entrepreneurial projects: ibuprofen particles of the magnificent turn - ibuprofen pop beads, and won the third prize of the 2020 College

Innovation and Entrepreneurship Competition. The pharmacy curriculum reform implemented above has played a certain effect in students' internal drive, the effect of course ideology, students' innovation ability, etc. However, the pace of curriculum reform can not be stopped, the next step will be to continue to optimize the training objectives of the pharmacy curriculum based on the objectives of the pharmacy professional training and to improve the teaching effect of the curriculum.

REFERENCES

[1] LIN Ling, MA Yunxia, TANG Haifei, ZHOU Wenhu. Exploration on the implementation path of pharmacy program's ideology and politics under the perspective of “three-round education”. Pharmacy Education 2022, Volume 40, Issue 3.

[2] ZhangZhirong. Introductiontothecurrentsituation and research direction of pharmacy/pharmaceutical materials research in China [J]. Journal of Sichuan University (Medical Edition), 2021, 52(4):539-542.

Father Image And Type Character Setting In Chinese Tv Series-- Take <The Long Season> As An Example

Wei Wang
ZiBo Vocational Institute, Shandong, China.

Abstract: Genre drama is an important form of contemporary TV series creation. It builds an expected viewing experience for audiences through a series of relatively fixed narrative patterns, character settings, and thematic expressions. In this framework, genre characters, as the core elements of dramas, play an important role in driving plot development and transmitting values. the role of "father" in Chinese TV dramas is a typical genre character, carrying the symbolic significance of family ethics and social responsibility. It is also an important carrier for exploring inter-generational relationships, the transmission of values, and personal growth. Taking The Long Season as an example, the father images in this drama are endowed with rich cultural symbolic meanings, showing their struggles, persistence, and transformations in the changes of the times. Through an in-depth analysis of these father images, this paper aims to explore the social morphology and individual contradictions under patriarchal discourse during China's social transformation, as well as how to find a balance between respecting tradition and embracing change.

Keywords: Chinese TV dramas; father images; genre characters; The Long Season

1. TYPE CHARACTERS IN GENRE PLAYS GENRE PLAYS

As an important form of expression in the creation of contemporary TV dramas, its core lies in constructing predictable viewing experience for the audience through a series of relatively fixed narrative mode, character setting and theme expression. This creation mode not only meets the audience's demand for stable viewing habits, but also quickly attracts a large number of target audience groups because of its distinctive characteristics and highly standardized narrative structure. In genre plays, genre characters are indispensable core elements. They not only promote the development of the plot, but also carry the important function of transmitting values. Genre characters are not simply divided by age, gender, or occupation, but are defined by the dramatic function they perform in the play. For example, hero characters often possess extraordinary courage, wisdom, or moral strength to fight evil forces and become idols and role models in the hearts of the audience. the villains, with their complicated motives and powerful destructive power, become the main obstacles of the story, and their existence adds tension and conflict to the plot. Ordinary people or intermediate characters reflect the social reality through the joys and sorrows of their daily lives and touch the audience's emotional resonance. These characters are interwoven in different ways in genre plays to build a complete story world and bring colorful viewing experience to the audience. With the development of society and the change of audience's aesthetic needs, genre plays are also developing and innovating. New narrative mode, character setting and theme expression are constantly emerging, injecting new vitality and charm into genre plays. However, no matter how genre plays change, the core functions of genre characters - promoting plot development and transmitting values - remain unchanged. the performance of these types of characters in the play not only affects the direction of the plot, but also imperceptibly shapes the audience's values and norms of behavior.

2. THE ROLE OF "FATHER" AS A TYPE OF CHARACTER

In modern times, the social sphere is divided

into the public/private sphere, and the study of the private sphere has been neglected in the name of 'nature' and 'instinct'. For example, a very small nuclear family consisting of three members: father, mother and child ". [[I]] In Chinese TV dramas, the role of "father", as a typical type of character, carries the symbolic significance of family ethics and social responsibility, and is also an important carrier to explore inter-generational relations, the inheritance of values and personal growth. Especially in the works of realism, father figure is often given more cultural symbolic significance, and becomes a window to see through social changes and the glory and dark side of human nature. Take the Long Season as an example. By telling the life changes of several generations under the background of reform and opening up, the drama vividly depicts the images of several fathers with different personalities. Some of these fathers are old-fashioned, disciplined, and have high hopes for their children. Some have the courage to explore the unknown and never give up even in the face of failure. In the face of life difficulties, with optimism and tenacity to support the family, despite their own limitations, but in constant efforts to seek self-redemption. These father figures not only show the sense of responsibility as a father, the spirit of sacrifice, and the adaptation and struggle in the complex social environment, but also through delicate emotional depiction and profound social insight, beyond the simple type label, become three-dimensional characters with depth and breadth. In the Long Season, fathers are not only the core of the family, but also witnesses and participants of the changing times. Their fate trajectory is closely connected with the social background, reflecting the specific.

3. SOCIAL FORM AND INDIVIDUAL CONTRADICTION UNDER PATRIARCHAL DISCOURSE

"Our body, behavior and subject are the result of power's action and shaping". [[II]] In the deep soil of Chinese traditional culture, patriarchy, as a deep-rooted social structure, has shaped the position of the father as the economic pillar and spiritual leader in the family, and its authority can hardly be challenged. However, with the acceleration of the pace of social modernization, especially the diversified development of economy, culture and ideas since the reform and opening up, the social form under the patriarchal discourse is undergoing unprecedented profound changes. In this revolution, the awakening of individual consciousness has become a beautiful landscape. the younger generation is beginning to show unprecedented self-awareness in terms of personal fulfillment, emotional freedom and career choices, in contrast to the traditional values held by the older generation of fathers. the older generation of fathers often emphasize family honor, responsibility and obedience, while the younger generation pays more attention to the realization of self-worth and personality. This inter-generational value conflict not only causes many contradictions within the family, but also has a wide impact on all aspects of social life, such as education reform, career development, marriage concept and so on. As a drama that deeply reflects this social phenomenon, the Long Season shows the process of value conflict and reconciliation between the older generation of fathers and the younger generation of children through vivid storylines and delicate characterization. In the drama, when several fathers of the main characters face the different life paths chosen by their children, they change from the initial incomprehension and opposition to the final acceptance and even support, which not only reflects the sublimation of personal emotions, but also the epitome of social progress. Through this transformation, the series deeply explores the repositioning of patriarchal discourse in modern society, and how to find a balance between respecting tradition and embracing change. In addition, the Long Season also touches on sensitive issues such as gender equality and domestic violence, and further broadens the depth and breadth of the father figure.

4. GROUP IMAGE CHARACTERISTICS OF MALE CHARACTERS IN <THE LONG SEASON>

The TV drama "The Long Season" has successfully created a series of distinct male characters through delicate characterization and ups and downs of the plot. Each of these characters has its own characteristics, which

together constitute the complex multi-dimensional character group image in the drama. Wang Xiang is one of the central characters in the drama, he as a train driver in the factory, the personality is self-righteous, bossy to the family, but there is a loving father's heart. the contradiction of this character makes Wang Xiang's role image three-dimensional and real. His strict discipline and arrogant attitude, while unpleasant, also reflected the expectations and pressures many fathers placed on their children in the context of the era. Gong Biao is another typical male character. He likes to brag and be self-righteous, but his nature is good, but he does not know how to take care of his wife. Gong Biao's role image, let people see the helplessness and struggle of many middle-aged men. His choices in life, although seemingly random, actually reflect the background of that era, many people in the face of life changes when confused and powerless. Wang Yang is a kind-hearted young man, but his blindness and impulsiveness also led him to the road of no return. His role image, let people see many young people in the face of love and life choices confused and confused. Ma Desheng and other characters, through their justice and persistence, show the courage and responsibility of men in the face of injustice and evil. Although these male characters have their own advantages and disadvantages, what they have in common is that they are trying to find their own position and value in the tide of the Times. Their choices and experiences not only reflect the background and social reality of that era, but also show the complexity and diversity of human nature. In short, the male characters in "The Long Season" have distinct images and different personalities, which together constitute a colorful group of characters in the play. Their choices and experiences not only let people see the background and social reality of that era, but also let people have a deeper understanding of human nature and destiny.

5. CONCLUSION

To sum up, the Long Season, with its profound themes and rich emotions, successfully creates a series of vivid and multidimensional father images. These images not only enrich the character gallery in the genre plays, but also profoundly reflect the complex face of the Chinese society in the transformation period and the brilliance of human nature. the fathers in the play, they are both the pillars of the family and the witnesses of the Times. They each have different personalities and fates, but together they show the sense of responsibility as fathers, the spirit of sacrifice, and the adaptability and struggle in a complex social environment. These images go beyond simple typified labels and become three-dimensional characters with depth and breadth, allowing the audience to have a strong resonance in the process of viewing. "The Long Season" through the delicate emotional depiction, let the audience see the father's inner struggle and growth. Their confusion, struggle and eventual growth in the face of social change have deeply revealed the repositioning of patriarchal discourse in modern society. While older fathers tend to uphold traditional values that emphasize family honor, duty, and obedience, the younger generation shows a stronger sense of self in terms of personal fulfillment, emotional freedom, and career choices. This inter-generational value conflict is not only reflected in the contradictions within the family, but also mapped to every level of social life. However, through the transformation and growth of the fathers, the audience sees the possibility of finding a balance between respecting tradition and embracing change.

In short, the Long Season, with its unique perspective and profound themes, succeeds in creating a series of vivid and multidimensional father figures. In fact, such a narrative mode is a kind of "family and country" narrative mode [[III]], These images not only let the audience see the brilliance and complexity of human nature, but also let the audience see the complexity of human nature. Let the audience gain growth and inspiration in thinking and resonating. It is a good work that reflects the changes of the Times, but also a mirror that reflects the choice and growth of each of us in the face of family and social changes.

REFERENCES

[1] Chizuko Ueno. Patriarchy and capitalism [M]. Zhejiang University Press, 2020,

02(02):51
[2] Zhang Zhicang. On Foucault's Discipline and Punishment "[J]. Jiangsu Social
[3] Sciences. 2004, (4). DOI:10.3969/j. issn. 1003-8671.2004.04.008.
[3] Deng Mengjie. Patriarchal logic construction and human subject spiritual awakening in Chinese Mythology [J]. Beauty and Times, 2024(19):145-147.

A Correlational Study on Integrity Education and Organizational Citizenship Behavior: The Mediating Role of Personal Characteristics

Wenjing Wang
Zibo Vocational Institute, Shandong, China

Abstract: More and more colleges and universities adopt the strict integrity education measures, in order to enable the graduate to put up Organizational Citizenship Behaviors at work. They expect that these measures can play a positive role in developing student's personal qualities. However, the integrity education with the low trust level has increasingly been questioned. This paper tries to research on the relationship between the trust level of universities' integrity education and Organizational Citizenship Behaviors, by issuing questionnaires, collecting questionnaires and analyzing the data of questionnaires with statistical software. the result is that the trust level of the integrity education has a positive impact on the Organizational Citizenship Behaviors through the mediating role of individual characteristics. IN other words, the integrity education with the low trust level has a negative effect on OCB. On this basis, we put forward the ideas and suggestions in improving the strict integrity education measures.

Keywords: Trust level of universities' integrity education; Individual characteristics; Organizational Citizenship Behaviors

1. INTRODUCTION

Organizational citizenship behavior is the focus of organizational behavior research, and various empirical studies on organizational citizenship behavior have shown that this behavior plays an important role in increasing organizational performance. And personal characteristics are an important factor affecting employees' organizational citizenship behavior.

The important formative period of personal characteristics is the period when employees receive higher education. the personal characteristics formed during the education period have a certain stability and will have a long-term impact on employees' work behavior. Whether integrity education can truly cultivate students' personal quality of integrity and then show organizational citizenship behavior in work is the question this article intends to explore.

2. THEORETICAL BASIS AND RESEARCH HYPOTHESES

Looking at the literature research on organizational citizenship behavior, there are more studies on the attitudinal variables around the organization, but fewer studies on personal characteristics. We only know that personal characteristics are the antecedent variables of organizational citizenship behavior, but there is currently no literature to further study the antecedents of personal characteristics. For the needs of this study, this article sets college integrity education as the independent variable, intending to further derive the relationship between low-trust integrity education and organizational citizenship behavior by analyzing the impact of college integrity education on personal characteristics (since this article mainly studies the impact of college integrity education on personal characteristics, the measurement of personal characteristics focuses on personal qualities related to integrity, such as integrity, respect for others, compliance with norms and social morality, etc.).

This article makes four basic hypotheses for this research:

Hypothesis 1: There is a positive relationship between the degree of trust in college integrity education and organizational citizenship behavior.
Hypothesis 2: the degree of trust in college integrity education has a positive impact on personal characteristics.
Hypothesis 3: There is a positive relationship between personal characteristics and organizational citizenship behavior.
Hypothesis 4: the degree of trust in college integrity education has a positive impact on organizational citizenship behavior through the mediation of personal characteristics.

3. RESEARCH METHODS

The main research methods adopted in this article include literature research method, questionnaire survey method and other social science research methods, as well as multivariate statistical methods such as descriptive statistical analysis, correlation analysis, and hypothesis testing.

3.1 Research Sample

The data was collected from the Department of Business Administration, School of Management, Shandong University. Starting from the accessibility, the target objects were MBA students who were studying or had graduated and were currently working in enterprises. According to their contactability, a total of 153 target students were locked.

3.2 Research Tools

This study explores the relationship between the degree of trust in college integrity education, personal characteristics, and organizational citizenship behavior. the scales used include the Trust Relationship Scale and the Organizational Citizenship Behavior Scale. the questionnaire is based on the scale and compiled according to actual needs. the measurement of each variable in the questionnaire adopts the Likert five-level scoring system. the respondents fill in their degree of agreement with the question according to the meaning of the question, from [strongly agree], [agree], [not sure], [disagree], [strongly disagree], and are given 5, 4, 3, 2, 1 points respectively (for reverse questions, it is 1, 2, 3, 4, 5 points). the higher the score, the higher the degree of agreement.

4. DATA ANALYSIS AND RESULTS

4.1 Descriptive Statistical Analysis

A total of 153 questionnaires were distributed in this study, and finally 134 valid questionnaires were recovered. Through the preliminary analysis (correlation analysis) of the data from these 134 questionnaires using SPSS software, we can obtain the descriptive statistical analysis results in Table 1. Table 1 summarizes the mean, standard deviation, and correlation coefficient of each variable.

From Table 1, we can see that the degree of trust in college integrity education shows a positive correlation with personal characteristics ($r = 0.96$, $p < 0.01$); the degree of trust in college integrity education also has a positive correlation with organizational citizenship behavior ($r = 0.71$, $p < 0.01$). As for personal characteristics, they have a positive correlation with organizational citizenship behavior ($r = 0.74$, $p < 0.01$). the above results are consistent with our hypotheses. This preliminarily verifies that the four hypotheses we proposed above are correct. Next, we need to conduct more detailed and specific verification.

Table 1

Variable	1	2	3	4	5	6
1. Age	1					
2. Gender	-0.01	1				
3. Peripheral Attitude Variables	0.08	-0.17	1			
4. Degree of Trust in Integrity Education	-0.03	0.11	-0.15	1		
5. Personal Characteristics	-0.06	0.11	-0.10	0.96**	1	
6. Organizational Citizenship Behavior	0.01	0.01	0.51**	0.71**	0.74**	1
Mean	1.58	0.58	3.12	3.10	3.24	3.28
Standard Deviation	0.57	0.50	1.10	1.30	1.19	0.81

Note: N = 134, ** $p < 0.01$, * $p < 0.05$

4.2 Hypothesis Testing

For the test of the hypothesis, we use the method of hierarchical regression (hierarchical regression modeling). the obtained results are shown in Table 2.

Main effect. In order to test Hypothesis 1, we

first set organizational citizenship behavior as the dependent variable, then added control variables (age, gender, peripheral attitude variables), and finally added the independent variable (the degree of trust in college integrity education). the results of the hierarchical regression analysis are listed in Table 2

Explanatory Variable↓ Dependent Variable→	**Personal Characteristics**		**Organizational Behavior**		**Citizenship**	
	M_1	M_2	M_3	M_4	M_5	M_6
Control Variables						
Age	-0.05	-0.04	-0.03	-0.01	0.02	0.01
Gender	0.10	0.01	0.10	0.03	0.02	0.02
Peripheral Attitude Variables	-0.79	0.05	0.53**	0.64**	0.60**	0.61**
Independent Variable						
Degree of Trust in College Integrity Education		0.96**		0.80**		0.33
Mediating Variable						
Personal Characteristics					0.80**	0.47**
R^2	0.02	0.93	0.27	0.89	0.90	0.90
ΔR^2	0.02	0.92	0.27	0.62	0.63	0.01

Note: N = 134; ** $p < 0.01$, * $p < 0.05$

Mediating effect. For the test of the mediating effect, we conduct the analysis in four steps: (1) the impact of the independent variable on the dependent variable (Hypothesis 1, already supported); (2) the impact of the independent variable on the mediating variable (Hypothesis 2). On the basis of introducing the control variables, we put the independent variable (the degree of trust in college integrity education) into the regression equation to analyze the impact of the degree of trust in college integrity education on personal characteristics; (3) the impact of the mediating variable on the dependent variable (Hypothesis 3). On the basis of introducing the control variables, we put the mediating variable (personal characteristics) into the regression equation to analyze the impact of personal characteristics on organizational citizenship behavior; (4) the mediating effect (Hypothesis 4). On the basis of introducing the control variables and the independent variable, we introduce the mediating variable into the regression equation to analyze the impact of the degree of trust in college integrity education and personal characteristics on organizational citizenship behavior. the results of the hierarchical regression analysis are listed in Table 2.

Table 2. From Table 2, we can see that the degree of trust in college integrity education has a positive impact on organizational citizenship behavior (M4, $\beta = 0.80$, $p < 0.01$). Therefore, Hypothesis 1 is supported by the data.

From the results in Table 2, we can see that the degree of trust in college integrity education has a significant positive impact on personal characteristics (M2, $\beta = 0.96$, $p < 0.01$), supporting Hypothesis 2. At the same time, personal characteristics have a significant positive impact on organizational citizenship behavior (M5, $\beta = 0.80$, $p < 0.01$), supporting Hypothesis 3. After adding the mediating variable, the impact of the degree of trust in college integrity education on organizational citizenship behavior becomes insignificant, while personal characteristics still have a significant positive impact on organizational citizenship behavior (M6, $\beta = 0.47$, $p < 0.01$). Therefore, Hypothesis 4 is also supported by the data, that is, personal characteristics play a complete mediating role in the relationship between the degree of trust in college integrity education and organizational citizenship behavior.

4.3 Research Results

Through the research and analysis of the data, we can draw the following research results:

There is a positive correlation between the degree of trust in college integrity education and organizational citizenship behavior, that is, the lower the degree of trust in college integrity education, the worse the

organizational citizenship behavior of employees; conversely, the better the organizational citizenship behavior. This also proves that the impact of low-trust integrity education on organizational citizenship behavior is negative, and the strict integrity education measures currently adopted by colleges and universities are not conducive to the cultivation of organizational citizenship behavior.

The degree of trust in college integrity education has a positive impact on personal characteristics, that is, the higher the degree of trust in college integrity education, the more conducive to the cultivation of students' personal characteristics. That is, low-trust integrity education cannot cultivate students' excellent moral character.

Personal characteristics have a positive impact on organizational citizenship behavior. That is, the better the performance of personal characteristics, the better the performance of organizational citizenship behavior, and vice versa.

College integrity education has an impact on organizational citizenship behavior through the mediation of personal characteristics. Therefore, to promote organizational citizenship behavior, we should start from the source and improve the integrity education measures in colleges and universities.

REFERENCES

[1] Bal P M, Chudzikowski K, Jansen P, et al. Individualized work arrangements and socio-economic factors in relation to motivation to continue working:a multilevel study of municipal influences [J]. The International Journal of Human Resource Management, 2022, 33(18):3629-3661.

[2] Chen Yashuo, Yang Chunjiang. Research on the influence mechanism of proactive personality on employees' task performance and organizational citizenship behavior [J]. Management Review, 2024, 36(1):188-200.

[3] Gu Jianping, Yu Tingzhong. Research on the influence of spiritual leadership on employees' organizational citizenship behavior—The role of organizational self-esteem and workplace exclusion [J]. Soft Science, 2020, 34(10):111-116.

Professional Undergraduate Education: Innovation and Challenges in Training Talents for the New Era

Xinyu Wang
Zibo Vocational Institute, Zibo, China

Abstract: As China's economic development model undergoes transformation and structural adjustments in its industries, vocational undergraduate education has rapidly emerged. This paper explores the characteristics and development paths of vocational undergraduate education, including clear career orientation, skill complexity, and innovation capability cultivation, adherence to industry-education integration and school-enterprise cooperation, as well as strengthening faculty team building. It elaborates on the theoretical foundation of vocational undergraduate education, such as the connotation and development of vocational education and the positioning of undergraduate vocational education. the current state of vocational undergraduate education is analyzed, including the number and distribution of institutions, major offerings, talent training models, advantages, and challenges. Finally, prospects for the future of vocational undergraduate education are presented, proposing strategies for development such as improving the system and standardization framework and deepening industry-education integration. It also predicts trends of sustained expansion in scale and leading educational reforms.

Keywords: Professional Undergraduate Education; Features; Development Pathways; Future Prospects

1. INTRODUCTION

1.1 Research Background

With the transformation of China's economic development model and the adjustment of industrial structure, there is a growing demand for high-level technical and skilled personnel. Vocational undergraduate education has rapidly emerged as an important pathway to meet this demand within China's higher education system. the newly enacted "Vocational Education Law" places vocational education on an equal footing with general education, providing legal safeguards for the development of vocational undergraduate education. Additionally, the "Opinions on Promoting High-Quality Development of Modern Vocational Education" issued by the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council set clear development goals, aiming to achieve a "target enrollment in vocational undergraduate education that is no less than 10% of the enrollment in higher vocational education by 2025. " the development of vocational undergraduate education not only helps optimize the structure of higher education in China but also enhances the attractiveness and quality of vocational education, providing a strong talent support for national economic and social development. For instance, according to the "Guiding Outline for the Planning of Talents in Manufacturing Industry, " by 2025, the demand for high-skilled technical talents in advanced rail transit equipment will be 430, 000 people, in aerospace equipment 966, 000 people, in energy-saving and new energy vehicles 1.2 million people, and in marine engineering equipment and high-tech ships 1.288 million people. These figures clearly demonstrate the immense demand for high-level technical and skilled talents and highlight the importance of vocational undergraduate education in cultivating such talents.

1.2 Research Objectives

Professional undergraduate education, as a new type of education, has unique features and development paths. Its characteristics are mainly reflected in the following aspects:

First of all, vocational undergraduate

education has a clear career orientation. It closely revolves around industry needs and aims to cultivate high-level technical and skilled talents who adapt to specific job positions. For example, in curriculum design, it places more emphasis on practical teaching components, introducing real business projects into the classroom, allowing students to enhance their professional skills in a genuine work environment. At the same time, vocational undergraduate education actively cooperates with enterprises to carry out order-based training, providing targeted talent delivery for enterprises [1].

Secondly, vocational undergraduate education emphasizes the composite nature of skills. With industrial upgrading and the emergence of emerging industries, the requirements for talents are no longer limited to single professional skills, but require comprehensive abilities across disciplines and fields. Vocational undergraduate education integrates high-quality resources from different disciplines to construct a professional structure with innovation and foresight, cultivating students' composite skills. For example, some vocational undergraduate institutions have set up interdisciplinary majors such as artificial intelligence and big data, intelligent manufacturing and industrial internet, cultivating compound talents who understand both technology and management. Moreover, vocational undergraduate education emphasizes the cultivation of innovative capabilities. In the knowledge economy era, innovation is the core driving force for economic development. Vocational undergraduate education cultivates students' innovative thinking and practical abilities through entrepreneurship education. For example, by setting up entrepreneurship courses, organizing entrepreneurship competitions, and establishing entrepreneurship practice bases, it provides a broad platform for students to innovate.

In terms of development path, vocational undergraduate education should adhere to the integration of industry and education, and cooperation between enterprises and schools. On one hand, schools and enterprises jointly formulate talent training programs and build professional practical and research bases to ensure that the knowledge and skills taught are closely aligned with market realities. On the other hand, through teachers taking projects to enterprises and enterprises bringing projects into schools, deep integration of production, learning, and research is achieved to enhance the ability to transform scientific research achievements.

In conclusion, exploring the characteristics and development paths of vocational undergraduate education is of great significance for optimizing vocational undergraduate education, improving the quality of talent training, and serving the national economic and social development.

2 THEORETICAL BASIS OF PROFESSIONAL UNDERGRADUATE EDUCATUIN

2.1 The Connotation and Development of Vocational Education

2.1.1 Historical Evolution of Vocational Education

China's vocational education can be traced back to the Fujian Mawei Shipbuilding School established in 1867, with a history of over 150 years. In the early days of the founding of New China, to meet the needs of national economic construction, the training of junior and intermediate technical talents and skilled workers was mainly undertaken by secondary professional schools and technical schools directly led and managed by central departments. After the Third Plenary Session of the Eleventh Central Committee, China's vocational education management entered a new historical stage. In the 1980s, China enacted several policies around the development of vocational high schools, with the school model basically following that of ordinary high schools.

2.1.2 The Relationship between Vocational Education and Economic Development

Taking industrial upgrading as an example, with the rapid development of China's economy and the continuous adjustment of its industrial structure, there is an increasingly urgent demand for high-quality technical skilled talents. Vocational education provides strong support for economic development by cultivating professionals who meet the needs of different industries. For instance, in the manufacturing sector, there is a huge demand for highly skilled technical talents in advanced

rail transit equipment, aerospace equipment, energy-saving and new energy vehicles, offshore engineering equipment, and high-tech ships. Vocational education closely revolves around these industry demands, setting up relevant majors and cultivating talents with professional skills and practical abilities to promote industrial upgrading and technological innovation.

In the process of industrial upgrading, vocational education has not only provided a large number of technical and skilled talents for enterprises, but also promoted the transformation and application of scientific research achievements through cooperation with enterprises. Jointly carrying out scientific research projects by schools and enterprises combines theoretical knowledge with practical experience, enhancing the innovation ability and competitiveness of enterprises. At the same time, vocational education also focuses on cultivating students'innovative consciousness and entrepreneurial ability, injecting new vitality into economic development.

3. THE POSITIONING OF UNDERGRADUATE VOCATIONAL EDUCATION

3.1 Differences with Ordinary Undergraduate Programs

Professional undergraduate education and general undergraduate education have significant differences in their training objectives. General undergraduate education focuses on the impartation of theoretical knowledge and the cultivation of academic research capabilities, aiming to provide students with a broad knowledge base for further study or academic research work. In contrast, professional undergraduate education aims to cultivate high-level applied technical skills talent, emphasizing the enhancement of students' practical abilities and vocational skills to enable them to quickly adapt to the needs of professional positions.

In terms of curriculum design, the courses offered by general undergraduate programs cover multiple disciplines, emphasizing the completeness and depth of theoretical systems. For example, a general undergraduate program's curriculum may include a large number of foundational theory courses, professional theory courses, and some general education courses. In contrast, vocational undergraduate programs focus more on practicality and specificity in their curriculum design. Taking computer science as an example, vocational undergraduate programs may have more practical courses such as software development project training, network engineering practice, etc., and will also introduce real-world projects from companies to enable students to master professional skills through practice.

In addition, the degree certificates are also different. the degree certificate for vocational undergraduate is a Bachelor's Degree in Major Certificate, and the name of the institution on the graduation certificate will have the word "Vocational". the degree certificate emphasizes vocational abilities and qualities in terms of authorization, granting standards, etc. Traditional general undergraduate is a Bachelor's Degree Certificate [2].

3.2 Interface with Professional Education

Professional undergraduate education has achieved an effective connection and improvement with vocational education. In terms of training levels, professional undergraduate education has more innovative requirements than vocational junior college education. Junior college education mainly trains students to master certain professional skills and be able to engage in specific work on the front line. Professional undergraduate education, based on junior college education, further improves students' professional literacy and innovation ability, enabling them to become technical backbone and management talents.

In terms of curriculum system, vocational undergraduate education is well-connected with junior college education. the courses of vocational undergraduate education will be deepened and expanded based on the junior college courses, adding some cutting-edge technical courses and innovative practice courses. For example, in mechanical manufacturing major, the junior college stage may mainly focus on learning mechanical processing technology and equipment operation, while the vocational undergraduate stage will add courses such as intelligent manufacturing technology and industrial robot application, cultivating students to master

advanced manufacturing technology and management methods.

Meanwhile, vocational undergraduate education provides junior college students with opportunities for further study. Junior college students can enter vocational undergraduate institutions of higher learning through various pathways such as "junior college to undergraduate" to enhance their academic level and professional competence. This type of articulation not only meets the developmental needs of individual students but also cultivates more high-quality technical and skilled talents for society.

In summary, vocational undergraduate education holds a unique position within the higher education system, differentiating itself from general undergraduate and junior college education while also being interconnected with them. Together, they cultivate various talents for national economic and social development.

4. CONCLUSION

In conclusion, vocational undergraduate education is expected to become an important force in the reform of higher education in China, promoting the optimization of the educational landscape. On one hand, vocational undergraduate education will break the shackles of traditional educational concepts and change people's inherent prejudices about vocational education. By cultivating high-level technical and skilled talents with solid theoretical knowledge, proficient mastery of new quality production materials, on-site technical handling capabilities, and applied technology R&D capabilities, it will enhance the social recognition of vocational education. On the other hand, vocational undergraduate education will promote the diversified development of the educational system. It differs from and interacts with general undergraduate education and junior college education, jointly cultivating various talents for national economic and social development. Vocational undergraduate education will continuously innovate in terms of major settings, talent cultivation models, and curriculum systems, providing references and examples for other types of education. For instance, its emphasis on practical ability training, industry-education integration, and entrepreneurship education will influence the reform direction of general undergraduate education and junior college education, prompting them to place more emphasis on students' practical abilities and innovative skills cultivation, and strengthening cooperation with enterprises. Furthermore, vocational undergraduate education will also drive the reform of the educational evaluation system. Traditional educational evaluation systems mainly focus on academic achievements, while vocational undergraduate education will pay more attention to students' professional abilities and comprehensive quality evaluations, which will make the educational evaluation system more diversified and scientific. In summary, vocational undergraduate education will play a leading role in the reform of higher education in China, driving the continuous optimization of the educational landscape.

REFERENCES

[1] Yuan Guanglin. Essential Connotation and Practical Logic of Vocational Undergraduate Education [J]. Jounal of Sias University, SIAS, Modern Education Management, 2024(01)119-128.

[2] Lu Yuzheng; Tang Ni. School of Education, Tianjin University; Central Institute for Vocational and Technical Education [J]. Journal of Vocational Education, 2024(40)50-57.

Crowd-sensing Privacy Protection Mechanism based on Double Trapdoor Homomorphic Encryption

Xinyu Wang
Zibo Vocational Institute, Zibo, China

Abstract: With the rapid development of mobile devices such as smartwatches and smartphones, Mobile Crowd Sensing (MCS) came into being. the MCS uses mobile devices to collect sensor data and consists of data requesters, cloud platform servers, and a large number of mobile participants. MCS is widely used in air quality monitoring, noise pollution monitoring, medical and health care, and other fields. However, MCS tasks require participants to upload private information, such as location, time, multi-attribute sensing data, etc., which can be easily stolen or tampered with by attackers, thus compromising the security and reliability of MCS. In order to solve these problems, this paper proposes a Crowd Aware Privacy Protection Mechanism (CPDT) based on double trap gate homomorphic encryption, which uses two cloud servers for decryption to ensure that the data receiver can decrypt the information only after receiving the data from the two servers, so as to achieve privacy protection, data aggregation and prevent single-server and user collusion attacks.

Keywords: Mobile Crowd Sensing, Privacy protection, Double-trap door homomorphic encryption, Data security

1. INTRODUCTION

The rapid development of mobile devices such as smartwatches and smartphones has given rise to the emergence of Mobile Crowdsensing (MCS) [1]. MCS is a new mode that utilizes mobile devices to collect sensor data. MCS consists of data requesters, cloud server platforms, and a large number of mobile participants. In MCS, multiple data requesters publish different tasks (such as temperature requirements, humidity requirements, etc.) to cloud platform servers, which then publish multiple tasks to mobile participants. Participants will upload the corresponding data to the cloud server according to the task requirements, and then the cloud server will classify and forward the data to the requester. Due to the convenience of MCS and the richness of sensing data, MCS has been widely used in various scenarios, such as air quality monitoring, noise pollution monitoring, healthcare, etc [2].

The task released by MCS requires participants to upload their privacy information. These privacy information include location information, time information, multiple attribute sensing data, etc. Attackers can obtain these sensitive data through eavesdropping and other methods. In addition, attackers may interfere or even manipulate the final collected data results by tampering with the information uploaded by participants and cloud platform servers, or disguising themselves as ordinary participants or cloud platform servers. These attacks will seriously endanger the security and reliability of MCS [3].

In response to the above issues, many security protection mechanisms have been implemented to protect MCS data, most of which are achieved through encryption algorithms [4]. However, these mechanisms ignore the multi-attribute requirements for uploading data in MCS. Specifically, a participant needs to upload data with multiple attributes (such as temperature, humidity, congestion level, etc.). According to traditional encryption mechanisms, participants need to encrypt data with different attributes one by one before sending them, which increases the amount of data transmission and communication consumption for participants. Secondly, traditional encryption mechanisms assume that cloud platform servers follow an honest

and curious attack model, in which the cloud platform servers only eavesdrop and analyze data. Moreover, in asymmetric encryption mechanisms, the public key is disclosed to all participants, and this key distribution algorithm ignores participants impersonating their identities for transmission or messages being forwarded and tampered with during communication. However, in practical scenarios, cloud platform servers may tamper with data or even generate incorrect data, and the information transmitted by participants may also be at risk of being tampered with or counterfeited.

To address these issues, we propose a Crowd-sensing Privacy Protection Mechanism based on Double Trapdoor Homomorphic Encryption (CPDT). In CPDT, we utilize two cloud servers for decryption. A data receiver can only decrypt the information after receiving data from both cloud servers. Additionally, data from different users can be aggregated within the cloud servers. Therefore, CPDT not only ensures privacy protection and data aggregation but also provides resistance against collusion between a single server and users.

2. RELATED WORK

In the field of privacy protection schemes based on homomorphic encryption, M. Arulprakash et al. proposed and implemented a real-time privacy-preserving data aggregation distributed scheme for mobile crowdsensing, named SMARTEE [4]. This design employs elliptic curve-based public key encryption and digital signatures to achieve faster computation, reduced storage requirements, and shorter keys. the digital signatures ensure data integrity and privacy protection. By integrating blockchain technology with traditional mobile crowdsensing systems, SMARTEE processes and analyzes the gathered crowdsensing data to ensure vehicular safety and privacy. the proposed blockchain-based architecture protects user information privacy while enhancing the security of the sensor environment. Additionally, Dapeng Wu et al. proposed a Dynamic Trust Relationship-based Privacy Protection Mechanism for Mobile Crowdsensing (DTRPP) [5]. This mechanism combines key distribution with trust management, evaluating the trustworthiness of public keys based on the number of supporters and trust levels of those keys. the trust value is estimated based on the accuracy of public keys provided by encountered nodes. DTRPP facilitates dynamic management of nodes and estimates public key trustworthiness. By classifying traffic data into different types and selecting appropriate relay nodes based on data type, this mechanism more efficiently utilizes network resources with relay trustworthiness and centrality. Extensive evaluation results show that, compared to traditional mechanisms, this scheme effectively protects data privacy and outperforms in terms of average delay, delivery rate, and load rate. Furthermore, Weizheng Wang et al. developed a secure, interactive, and fair blockchain-based mobile crowdsensing system named BSIF [6]. To prevent illegal participants, BSIF requires all users to verify their identity using a private key during the registration phase. In the case of location privacy leakage of workers, a location-based symmetric key generator is used to coordinate a session key chosen for target-range worker selection. Additionally, the data evaluation process is transferred to the requester (e. g., a personal computer), reducing the computational cost for blockchain nodes. Due to the homomorphic properties of the Paillier encryption system and common interests, requesters cannot violate blockchain instructions. the system further employs a Stackelberg game to study worker participation levels and fair reward mechanisms for requesters, achieving dynamic balance.

3. NETWORK MODEL

The network model is an MCS system that consists of three main components: the data requester, two cloud service platforms, and participants. First, the data requester generates a public-private key pair, where the public key is distributed to all, and the private key is securely stored by the two cloud servers. Data requesters with different attribute requirements then publish tasks to the cloud platform servers. Upon receiving a task request, one of the cloud servers forwards the task to the participants. As participants move, they collect the required data, encrypt it, and

send it to both cloud servers. the two cloud servers can independently decrypt the collected data using their keys. Finally, the partially decrypted data is sent by the cloud servers to the data requester for final decryption.

4. PROPOSED MECHANISM

CPDT is an additive homomorphic cryptosystem that can be used to implement privacy preserving and secure outsourced computation in a multi-key environment. In Bresson-Catalano-Pointcheval (BCP) encryption algorithm, there is a master key that can be used to decrypt all ciphertexts regardless of the underlying public key. This master key compromise can lead to a security breakdown of the entire system. To overcome this attack, in DT-PKC, p and q are 2 large prime numbers and N=p*q. the master key λ is divided into two parts into λ_1 and λ_2, which are sent to Cloud Storage Server (CSS) and Computing Service Provider (CSP) respectively. Therefore, the master key decryption process consists of 2 parts, the plaintext domain in this system is Z_N, and the ciphertext domain is Z_{N^2}, the encryption and decryption process is as follows.

4.1 Encryption

For a plaintext $m \in Z_N$, the private key is sk and the public key is $pk = g^{sk}$. A random number $r \in Z_N$ is chosen. Then, we can then compute the ciphertext [m].

$$X = g^r \ mod \ N^2$$
$$Y = (1 + mN)pk^r \ mod \ N^2$$
$$[m] = (X, Y)$$

4.2 Decryption

Decrypting the ciphertext [m] with CSS, we get the formula: $Y' = Y^{\lambda_1} \ mod \ N^2 = (1 + m\lambda_1 N)pk^{r*\lambda_1} mod \ N^2$. the above procedure is denoted as algorithm $PDec_{\lambda_1}(Y)$. $\{Y, Y'\}$ is sent to CSP, and CSP calculates the result according $Y'' = Y^{\lambda_2} \ mod \ N^2 = (1 + m\lambda_2 N)pk^{r*\lambda_2} mod \ N^2$. Then the plaintext is $m = (Y' \cdot Y'' - 1)/N \ mod \ N^2$. This partial decryption process is denoted by algorithm $PDec_{\lambda_2}(Y, Y')$.

4.3 Homomorphic property

For any two ciphertexts that are encrypted with the same public key, the additive homomorphism property is $[m_1] \cdot [m_2] = [m_1 + m_2]$. The multiplicative homomorphism property is $[m_1 + m_2] = [m_1]^{m_2}$. For any given $x \in Z_N$, we get the formula $[m]^x = [x \cdot m]$, and when $x = N - 1$, there is $[m]^{N-1} = [-m]$.

4.4 Process

The Key Generation Center (KGC) distributes public and private key pairs to the participants. Each participant receives a public-private key pair, where the public key is used for data encryption, and the private key is securely kept by the participant and not disclosed during the operation of the scheme.

Data users, such as medical staff in hospitals, publish data request tasks through authorized third-party service providers. These tasks are then forwarded to the cloud servers, which in turn pass the tasks to the participants (data providers).

Data providers collect the required sensitive data, such as medical records or diagnostic information, and encrypt the data using the public key. the encrypted data is then sent to the two cloud servers.

The two cloud servers perform decryption operations using their respective private keys. the decrypted data is then aggregated on the cloud servers, for example, integrating and analyzing data from different data providers.

The decrypted and aggregated data is sent back to the data users (e. g., doctors). Finally, data users, through authorized third-party service providers, can access the diagnostic results or other relevant data analysis outcomes based on the model services provided by the cloud servers.

5. SECURITY ANALYSIS

The double trapdoor homomorphic encryption mechanism enhances privacy by using two separate cloud servers for decryption, ensuring that data remains secure even if one server is compromised. This redundancy reduces vulnerability to targeted attacks and prevents collusion between servers and users. Homomorphic encryption enables data aggregation directly on encrypted values, preserving the privacy of sensitive user information throughout the aggregation and processing phases in MCS systems.

The encrypted data exchanged between servers and participants is safeguarded against eavesdropping and tampering. If an attacker attempts to alter encrypted data,

inconsistencies during decryption between the two servers reveal the tampering, protecting data integrity.

Finally, only the data requester holds the complete decryption key, while each cloud server maintains part of the private key, preventing any single entity from fully decrypting or manipulating the data. This secure key distribution preserves both privacy and integrity across the system.

6. CONCLUSION

In this paper, aiming at the security problems of privacy leakage and data tampering in MCS, a Crowd Sensing Privacy Protection Mechanism (CPDT) based on double trap door homomorphic encryption was proposed. the CPDT mechanism introduces two cloud servers for decryption to ensure that the data receiver can decrypt the information only after receiving the data from the two servers, so as to effectively protect user privacy. At the same time, the CPDT mechanism supports data aggregation within the ECS, improving data processing efficiency. Experimental results show that the CPDT mechanism not only realizes privacy protection and data aggregation, but also has the ability to resist the collusion attack of a single server and users. Therefore, the CPDT mechanism provides a strong security guarantee for the wide application of MCS, which is of great significance for promoting the further development of MCS technology. In the future, we will continue to optimize the CPDT mechanism to improve its performance and reliability in practical applications.

REFERENCES

[1] Yan X, Ng W W Y, Zeng B, et al. P 2 SIM: Privacy-Preserving and Source-Reliable Incentive Mechanism for Mobile Crowdsensing [J]. IEEE Internet of Things Journal, 2022, 9(24):25424-25437.

[2] Chen Z, Gul O M, Kantarci B. Practical Byzantine Fault Tolerance-based Robustness for Mobile Crowdsensing [J]. Distributed Ledger Technologies: Research and Practice, 2023, 2(2):1-24.

[3] Wei W, Chen H, Liu X, et al. Towards time-constrained task allocation in semi-opportunistic mobile crowdsensing [J]. Ad Hoc Networks, 2023, 150(11):103282.

[4] Zhang Y, Li P, Zhang T, et al. Dynamic User Recruitment in Edge-aided Mobile Crowdsensing [J]. IEEE Transactions on Vehicular Technology, 2023, 72(7):9531-9365.

[5] [4] Arulprakash M, Jebakumar R. People-centric collective intelligence: decentralized and enhanced privacy mobile crowd sensing based on blockchain [J]. the Journal of Supercomputing, 2021:1-27.

[6] [5] Wu D, Si S, Wu S, et al. Dynamic trust relationships aware data privacy protection in mobile crowd-sensing [J]. IEEE Internet of Things Journal, 2017, 5(4):2958-2970.

[7] [6] Wang W, Wang Y, Duan P, et al. A triple real-time trajectory privacy protection mechanism based on edge computing and blockchain in mobile crowdsourcing [J]. IEEE Transactions on Mobile Computing, 2022.

Deepening and Transformation of Innovative Thinking in Art Education under the New Context of AIGC

Yu Xin
Zibo Vocational Institute, Shandong Zibo, China

Abstract: The advent of AIGC (Artificial Intelligence Generated Content) has ushered in novel creative modalities, avenues for resource acquisition, and aesthetic conceptions, thereby constituting a distinctive context. In art education, innovative thinking holds paramount importance, encompassing the creative cogitation and exploration of students and educators in aspects such as art creation, teaching methods, and aesthetic judgment. Under the new AIGC context, innovative thinking presents two crucial directions of change: deepening and transformation, which are of profound significance for cultivating art talents capable of adapting to the demands of the times.
Keywords: AIGC; Art Education; Innovative Thinking; Deepening and Transformation.

1 INTRODUCTION

With the rapid progression of artificial intelligence technology, AIGC is progressively emerging as a new trend in the realm of art. the appearance of AIGC not only brings forth new creative methods, means of obtaining resources, and aesthetic concepts but also presents fresh opportunities and challenges for art education. Innovative thinking has always occupied a crucial stance in art education, encompassing the creative thinking and exploration of students and educators in art creation, teaching methods, and aesthetic judgment. Under the new AIGC context, innovative thinking in art education exhibits two important directions of change: deepening and transformation. Deepening implies further expansion and enhancement on the original foundation, while transformation denotes fundamental shifts and reconstructions.

2 THE CONNOTATION AND SIGNIFICANCE OF INNOVATIVE THINKING IN ART EDUCATION UNDER THE NEW CONTEXT OF AIGC

2.1 Analysis of the Application Status of AIGC in the Field of Art

AIGC, namely artificial intelligence generated content. AIGC technology can generate content with artistic beauty by simulating and learning a large number of artworks, thereby promoting the development of personalized and innovative artistic expressions [[1]]. It possesses distinct characteristics, including diversity, being capable of generating works of various styles and themes to meet the needs of different users. Simultaneously, high efficiency is also one of its remarkable traits, being able to rapidly produce a large quantity of content and provide abundant materials for art creation. In the field of art design, AIGC offers designers more creative inspirations and design solutions. Designers can understand different styles and forms of expression through AIGC-generated works and broaden their design thinking. Additionally, AIGC can also expedite the design process and enhance design efficiency.

2.2 Elaboration on the Characteristics and Importance of Innovative Thinking

Innovative thinking in art education comprises creativity, critical thinking, and imagination. Creativity refers to the ability to produce novel and unique artworks. Critical thinking refers to the ability to analyze, evaluate, and reflect on artworks. Imagination refers to the ability to create unseen artistic images and scenes in the mind. Innovative thinking exhibits characteristics such as uniqueness, flexibility, and openness. It not only necessitates deep exploration of the connotations and connections of traditional things but also requires breaking the inertial way of thinking to design innovative artworks [[2]]

Innovative thinking is of great significance for students' personal development. On one hand, it can cultivate students' creativity, enhance their aesthetic ability, and facilitate their future career development. On the other hand, it can help students improve their comprehensive quality, cultivate their innovative spirit and practical ability. Innovative thinking also plays a positive role in promoting the development of art education, promoting teaching method reform and innovation, enriching the diversity and depth of teaching content, and improving education quality to meet the needs of the times.

3 DEEPENING OF INNOVATIVE THINKING IN ART EDUCATION UNDER THE NEW CONTEXT OF AIGC

3.1 Paths for Deepening Creative Inspiration

A large number of artworks generated by AIGC cover various styles, themes, and forms of expression, providing students with rich sources of inspiration. Students can understand different artistic styles and creative methods by appreciating AIGC-generated works and stimulate their creative inspiration. At the same time, students can conduct in-depth analysis, interpretation, and borrowing of AIGC works to unearth deep creative elements, expand thinking boundaries, and achieve deepening and breakthroughs in creativity. For example, in design teaching, teachers can use AIGC-generated images as references to guide students in creation. Students can analyze elements such as the composition, color, lines, and design concepts of AIGC works to understand their creative ideas and methods, interpret the themes and connotations of the works to obtain inspiration and enlightenment, and borrow the innovative aspects of AIGC works and integrate them into their own creations to achieve breakthroughs and innovations and create design works with their own styles.

3.2 Innovative Exploration of Technology Integration

AIGC technology can be integrated with traditional art education in multiple aspects such as digital painting, music synthesis, and literary creation. In digital painting, students can utilize AI painting tools such as DALL-E2, Stable Diffusion, and Midjourney for sketching and color matching, conduct style transfer and creative experiments [[3]], quickly generate painting works of different styles, improve painting efficiency and quality, and enrich the forms of expression. In music synthesis, students can use artificial intelligence music generation software for music creation and arrangement to enrich the forms of expression of music. In literary creation, students can use artificial intelligence writing assistants for creative inspiration and text generation to improve writing level and efficiency. This integration of technology brings new impetus for innovation to art education. On one hand, it increases students' learning interest and participation. Through the use of AIGC technology, students can more intuitively feel the fun and charm of art creation and improve their learning enthusiasm and initiative. For example, in lacquer painting teaching, through the creative curriculum design of "remote lacquer collection". On the other hand, technology integration expands the teaching content and methods of art education. Teachers can use AIGC technology to provide students with more learning resources and creative tools, enrich teaching content and methods, and improve teaching effects.

3.3 Strengthening Strategy of Critical Thinking

Students establish aesthetic standards, recognize technical limitations, and conduct critical analysis of AIGC-generated artworks through steps such as observation, description, analysis, evaluation, and reflection. Critical thinking can promote the deepening of innovative thinking. Through screening creativity and judging artistic value, it can break through thinking stereotypes and improve aesthetic judgment and innovation ability. In art creation, critical thinking can help students screen and optimize their own creativity, improve the quality and artistic value of their works. At the same time, critical thinking can also help students break through thinking stereotypes, open up innovative thinking, and improve innovation ability. For example, in art design creation, students can reflect and improve their works through critical thinking and continuously improve the artistic value and innovation degree of their works.

4 TRANSFORMATION OF INNOVATIVE THINKING IN ART EDUCATION UNDER THE NEW CONTEXT OF AIGC

4.1 Transformation Strategy of Teaching Mode

Under the new context of AIGC, the transformation strategy of teaching mode includes two points: 1. the transformation from teacher-centered to student-centered teaching mode. 2. Students use AIGC tools for independent learning and exploration. the transformation from teacher-centered to student-centered teaching mode means that teachers change from knowledge transmitters to guides, inspirers, and promoters. Teachers guide students in independent learning and innovative practice by designing questions, providing resources, and organizing discussions. Students use AIGC tools for independent learning and exploration. Students choose AIGC tools and learning resources suitable for themselves according to their own interests and needs and formulate learning plans and goals. For example, they can use artificial intelligence image generation tools for painting creation and artificial intelligence writing assistants for design creative writing, giving full play to their creativity and imagination and improving learning effects and innovation ability.

4.2 Rethinking on the Reshaping of Art Evaluation Standards

AIGC-generated works have changed the evaluation subjects, objects, and standards, challenging the traditional art evaluation system. the traditional art evaluation standard mainly focuses on aspects such as manual skills, aesthetic value, and cultural connotations of works, while AIGC-generated works pay more attention to aspects such as innovation, technology integration degree, and personalization. Therefore, when constructing a new art evaluation standard in the new context, the following elements need to be considered: innovation, technology integration degree, personalization, aesthetic value, cultural connotations, etc.

At the same time, when facing AIGC-generated artworks, teachers and students should adopt an objective attitude to carry out art experience and art re-creation activities. Incorporate their unique emotional experiences, continuously strengthen thinking depth, and continuously reprocess and re-create these works to truly transform them into art masterpieces containing the artist's subjective thinking.

4.3 Strengthening Strategy of Interdisciplinary Cooperation

AIGC can powerfully promote the deep integration of art with other disciplines such as science, technology, engineering, and mathematics. the implementation approaches include interdisciplinary curriculum design, project-based learning, and collaborative creation. In art education, interdisciplinary cooperation is of great significance. On one hand, it can effectively cultivate students' comprehensive qualities and enable the coordinated development of students' knowledge and skills in multiple fields. On the other hand, it can greatly expand the boundaries of artistic innovation and bring more possibilities and innovations to artistic creation. For example, students can fully utilize scientific knowledge and advanced technical means for art design creation, such as conducting light and shadow visual creation with the help of physical principles and using digital technology for virtual reality environment display. Through the integration and collision of different disciplines, new inspirations for artistic creation are stimulated and new fields of artistic innovation are opened up.

5. CONCLUSION

The new context constructed by AIGC brings new opportunities and challenges for the deepening and transformation of innovative thinking in art education. Through in-depth analysis of the application status of AIGC in the field of art, the connotation and importance of innovative thinking, and the paths of deepening and transformation, we can clearly recognize that although the emergence of AIGC has had a strong impact on artistic innovative thinking, technology-enabled art education not only provides new creative methods, ways of obtaining resources, and aesthetic concepts, but also opens up new paths and methods for cultivating students' innovative thinking and practical ability. In the future art education, it is necessary for us to further explore the deep integration of AIGC and art education, continuously improve the

art evaluation system, and vigorously strengthen interdisciplinary cooperation, so as to cultivate more art talents with innovative ability and comprehensive quality and promote the prosperity of art.

EFERENCES

[1] Li Ya, Hu Binbin. Technology Empowers Innovation: The Transformation Opportunity of Media Art Education under the Wave of AIGC [J]. Media, 2024, (19): 22-24.

[2] Li Sufang, Fan Ning, Lu Xin, et al. On the Application of Creative Thinking in Logo Design [J]. Industrial and Technological Forum, 2020, 19(23): 47-48.

[3] Li Fei, Lv Xin. Research on the Application Scenarios and Production Mechanisms of AIGC in Media Art Education [J]. Media, 2024, (19): 12-15.

Clinical Efficacy of Pemetrexed Combined with Platinum Drugs in the Treatment of Lung Cancer

Liu Yang
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: Objective: to explore the clinical efficacy of pemetrexed combined with platinum drugs in the treatment of lung cancer. Methods: 84 cases of lung cancer patients admitted to a hospital were selected, and the patients were randomly divided into the control group and the experimental group, with 42 cases in each group. the patients in the control group were treated with pemetrexed combined with carboplatin, and the patients in the experimental group were treated with pemetrexed combined with cisplatin, and the clinical efficacy and the incidence rate of adverse reactions of the patients in the two groups were compared. Results: the total effective rate of treatment of patients in the control group was 57.14%, and the total effective rate of treatment of patients in the experimental group was 52.38%, and the difference in the total effective rate of recent treatment between the two groups was not statistically significant. There was no statistically significant difference in the incidence of adverse reactions such as nausea and vomiting, anaemia, leukopenia, neutropenia, liver function abnormality and skin rash between the two groups. Compared with the control group, the incidence of thrombocytopenia in patients in the experimental group was significantly reduced, and the difference was statistically significant ($P < 0.05$). Conclusion: the efficacy of pemetrexed combined with platinum drugs in the treatment of lung cancer is better, the incidence of adverse reactions in patients is lower, and the incidence of thrombocytopenia in patients treated with pemetrexed combined with cisplatin is significantly lower.

Keywords: Pemetrexed; Platinum-based drugs; Lung cancer; Clinical efficacy

1. INTRODUCTION

In today's world, cancer is a common disease that seriously threatens people's health. It has been shown that the mortality rate caused by cancer ranks second among all diseases, after cardiovascular and cerebrovascular diseases [1]. Cancer is usually characterised by the following features: abnormal cell proliferation or cell mutation; the ability to enter and erode surrounding tissues; and a high potential risk. Therefore, people have also been constantly researching drugs that can treat and are effective in treating cancer.

Lung cancer is one of the common malignant tumours in China, and the incidence and mortality rates of lung cancer are increasing year by year in the whole country and even in the world, and the rising trend is very rapid. Currently, lung cancer is in the first place in the ranking of malignant tumours and accounts for more males than females. Among all the new cases of malignant tumours, the proportion of lung cancer is also relatively obvious, accounting for about 20%, of which the proportion of males is also slightly higher than that of females [2]. It is generally believed that lung cancer is mainly caused by the following factors: smoking, carcinogenic factors, air pollution, ionising radiation, and other external factors; in addition, its intrinsic factors can have a similar effect on the occurrence of lung cancer, such as viral infections and fungal toxins. Among many lung cancer patients, about 80% are diagnosed with non-small cell lung cancer [3]. Most of these patients are in advanced stages, when surgical resection is not suitable for treatment. Therefore, chemotherapy is the main clinical treatment for these lung cancer patients. Clinically, when applying chemotherapeutic drugs to treat lung cancer, platinum drugs are the most common and widely used, but while achieving relatively good therapeutic effects,

they often produce some adverse reactions, such as bone marrow suppression, liver and kidney damage, and also cause patients to experience symptoms such as nausea, vomiting, leukocyte and platelet reduction, anaemia or allergy.

2. DATA AND METHODS

2.1 Drug information

The mechanism of action of platinum anticancer drugs is that platinum drugs are hydrolysed into hydrate after entering the tumour cells through transmembrane transport, and the hydrate is further deprotonated to generate hydroxylated ligand ions, which are complexed with the two guanine bases of DNA at the N7 position in vivo to form a closed five-membered chelating ring, which can disrupt the replication of DNA and hinder the division and proliferation of the cancer cells, and ultimately lead to the death of the tumour cells. Cisplatin (cisplatin) is a first-generation platinum complex, which is a refractory compound; it is a highly effective broad-spectrum antitumour agent with high anticancer activity; and it is a cyclic non-specific drug. Ototoxicity, nephrotoxicity, enterotoxicity, neurotoxicity occur in high dose use, and drug resistance occurs in long-term use. In order to further enhance the antitumour activity and reduce the toxic side effects, other metal complexes such as carboplatin and oxaliplatin were subsequently developed. the mechanism of action of carboplatin is the same as that of cisplatin, and the adverse effects are much smaller than those of cisplatin. In the clinical treatment of some cancers, carboplatin is usually used instead of cisplatin to slow down drug resistance [4].

Pemetrexed is a kind of antifolate cytotoxic drug, which has special tissue activity and can affect the synthesis of oncogenic factors in cells, thus making the survival and spread of tumour cells in the body extremely difficult, thus making it a multi-targeted drug for the treatment of tumour diseases. Pemetrexed contains the structure of pyrrolopyrimidine moiety, which transports the folate carrier protein to the patient's tumour cells by active operation, and the pyrrolopyrimidine moiety is ultimately converted to polyglutamic acid, thus making the tumour cells incapable of replicating and growing malignantly [5].

2.2 General information

In order to study the clinical efficacy of pemetrexed combined with platinum drugs in the treatment of lung cancer, the medication and cases of 87 patients receiving treatment for advanced non-small cell lung cancer in a hospital from January 2023 to August 2023 were collected. For the convenience of observation, we divided these 87 patients into two groups equally, i. e., control and experimental groups, with 42 cases in each group. Among all the lung cancer patients selected, 51 were male and 33 were female, and the age of the patients ranged from 38 to 78 years, with a mean age of (55.1±4.6) years. In the control group, pemetrexed and carboplatin were administered in the same way, with 24 male cases and 18 female cases, the patients‘ ages ranged from 39 to 79 years old, and the average age was (54.6±4.4) years old; in the experimental group, pemetrexed and cisplatin were administered in the same way, with 27 male cases and 15 female cases, the patients’ ages ranged from 38 to 76 years old, and the average age was (52.3±4.1) years old. Comparison of the improvement of the two groups of patients after treatment.

According to the results of data analysis, there is no significant difference between the two groups of observation subjects in the comparison of general information. the enrollment criteria of the observation subjects: diagnosed as lung cancer by cytology or pathology; all of them have received chemotherapy and have no contraindication to chemotherapy; the patients are conscious and mentally normal, and there is no communication disorder.

2.3 Methods

Pemetrexed and carboplatin were given to the patients in the control group, and pemetrexed and cisplatin were given to the patients in the experimental group. At the beginning of the experiment, pemetrexed was given to both groups of observation subjects for the preliminary work, and the way of administration was intravenous injection, and then, on the first day of treatment, patients in the control group were injected with carboplatin intravenously, and patients in the experimental group were injected with cisplatin intravenously; the cycle of treatment

was every three weeks as a cycle, and the clinical performance of patients in the two groups was observed [6].

2.4 Observation indicators and efficacy evaluation criteria

Clinical efficacy evaluation criteria are: complete remission (CR): lesion shrinkage of more than 70%; partial remission (PR): lesion shrinkage of 50-70%; stable (SD): lesion increase of 20% or less; progress (PD): lesion increase of more than 20%.

2.5 Statistical methods

SPSS 22.0 software was used to collate the data in the cases, and the count data were expressed as percentage (%) and X2 test was performed, and the difference was statistically significant if the result was P<0.05.

3. RESULTS

3.1 Comparison of the efficacy of patients in the control group and experimental group

Table 1 Comparison of efficacy of patients in control and experimental groupse

groups	quorum	CR	PR	SD	PD	Overall effectiveness rate(%)
control subjects	42	10	14	15	3	57.14
experimental group	42	11	11	17	3	52.38
X2 value						0.34
P-value						>0.05

In the clinic, the patients' own conditions are different, the causes of the disease are different, and the treatment plans given to the patients will be different. Taking the above conditions as a premise, 84 lung cancer patients were treated, and after a period of treatment, the total effective rate of the patients in the control group was 57.14%, and the total effective rate of the patients in the experimental group was 52.38%. Analysis of the data in Table 1 shows that there is no significant difference in the total effective rate of treatment between the two groups of patients (P>0.05).

3.2 Comparison of the median survival of patients in the control group and experimental group

Table 2 Comparison of median survival profile of patients in control and experimentalgroups

groups	quorum	1 year survival	1 year survival rate(%)
control subjects	42	23	54.76
experimental group	42	20	47.62
X2 value			0.23
P-value			>0.05

In the selected 84 patients, after the corresponding drug treatment, the median survival of the two groups was observed as follows: the median survival of the patients in the control group was (10.9±1.8) months, and the number of 1-year survivors was 23, with a 1-year survival rate of 54.76%; in the experimental group, the median survival of the patients was (11.2±2.3) months, and the number of 1-year survivors was 20 with a 1-year survival rate of 47.62%. When analysing the data in Table 2, it can be seen that there is no statistically significant difference between the median survival period and the 1-year survival rate of the patients in the control group and the experimental group (P>0.05).

3.3 Comparison of the adverse reactions of patients in the control group and the experimental group

Table 3 Comparison of adverse effects in patients of control and experimental groups

adverse reaction	control subjects	Experimental group	X2 value	P-value
nausea and vomiting	4	7	1.79	0.16
Abnormalities in liver and kidney function	1	0	3.31	0.08
leucopenia	12	12	0.00	1
thrombocytopenia	7	1	9.56	0.002
anemic	9	13	2.41	0.14
a rash	1	0	0.00	1

When the data in Table 3 were analysed, there was no significant difference in the incidence

of nausea and vomiting, abnormalities in liver and kidney functions, leukopenia, anaemia, and skin rash adverse reactions between the two groups (P > 0.05). Comparing the data of the experimental group and the control group, the incidence of thrombocytopenia in patients in the experimental group was very low, with a significant difference (P<0.05).

3.3.1. Analysis of the occurrence of adverse reactions of two platinum drugs

Table 4 Number of Adverse Reactions to Pemetrexed Combined with Carboplatin and Cisplatin

veterinary drug	Number of co-drug users	Number of adverse reactions
Cisplatin (Generation I)	42	23
Carboplatin (II)	42	12

As can be seen from Table 4, in the process of treating lung cancer, the number of people using pemetrexed and cisplatin in combination is 42, of which the number of people with adverse reactions is 23, and the rate of adverse reactions is 54.76%; the number of people using pemetrexed and carboplatin in combination is 42, of which the number of people with adverse reactions is 12, and the rate of adverse reactions is 28.57%. In comparison, the incidence of adverse reactions of pemetrexed combined with cisplatin is higher, and the rate of adverse reactions of combined carboplatin is nearly 1/2 lower than that of cisplatin, so it can be considered that the second generation of platinum anticancer drugs has lower adverse reactions than the first generation.

3.3.2 Analysis of adverse reactions at different ages

Table 5 Analysis of the occurrence of adverse reactions by age

age	78>age ≥68	68>age ≥58	58>age ≥48	48>age ≥38
myelosuppressione	4	3	6	1
Allergic reactione	2	2	0	1
liver and kidney damage	2	1	1	0
Gastrointestinal reactionse	1	2	1	1

According to Table 5, among the people who had adverse reactions, 17 patients in the age group of 58 ≤ age <78 had more adverse reactions, accounting for 60.72% of the total number of adverse reactions, and myelosuppression was the most frequent type of adverse reaction, and the incidence of allergic reaction, liver and kidney function damage and gastrointestinal reaction in this age group did not differ too much, while those in the age group of 38 ≤ age <55 had fewer patients with liver and kidney damage and gastrointestinal reaction, accounting for 39.29% of the total incidence of this type of adverse reaction. Age <55 segment, the number of patients with liver and kidney impairment, allergic reactions, and gastrointestinal reactions was low, and the number of occurrences of this type of adverse reaction was 11, which accounted for 39.29% of the total incidence of adverse reactions. In the overall data, a large portion of people experienced adverse reactions of bone marrow suppression, which was mainly due to the fact that middle-aged and elderly people are getting older, the function of organs in their bodies deteriorate compared to middle-aged people, the function of the defence system of human body organs is weakened, the blood cells in the bone marrow are subjected to external interference, and the activity of the white blood cells is weakened, which leads to the suppression of the bone marrow.

4. CONCLUSION

From the above comparative analysis of medication and data of lung cancer patients, it can be seen that platinum drugs play a very obvious role in the treatment of lung cancer, but there are many adverse reactions occurring while using pemetrexed combined with platinum drugs. Therefore, platinum drugs are not applicable to all patients' physique and are not applicable to the treatment of all lung cancer patients. When treating and administering drugs to patients, various factors should be taken into consideration. Therefore, whether in cities or grassroots communities, the relevant governments and hospitals should increase the awareness of cancer prevention, strengthen the screening of lung cancer in a timely manner, and enhance people's awareness of cancer prevention and treatment, so as not to put off the serious illness, and to strive for early detection and early treatment, so as to reduce the incidence

of lung cancer and its mortality rate.

REFERENCES

[1] LIN Qiqi, LI Xinyang, MENG Fanhao. Study on the resistance mechanism of pemetrexed in non-small cell lung cancer [J]. China Pharmacovigilance, 2023, 20(11):1201-1208.

[3] ZHANG Zhirong, BUAI Tudi Gublaishan. Clinical effect and safety analysis of pemetrexed combined with cisplatin in the treatment of non-small cell lung cancer [J]. China Practical Medicine, 2023, 18(14):99-102.

[4] WANG Chuanshui, LIU Chengliang. Effect of pemetrexed disodium combined with cisplatin in advanced lung cancer and its effect on tumour markers [J]. China Modern Drug Application, 2023, 17(12):86-89.

[5] CHEN Feihong, ZHAO Deming, GOU Shaohua. Research progress of platinum drugs with anti-tumour immunotherapeutic effects [J]. Journal of China Pharmaceutical University, 2024, 55(01):26-35.

[6] Wang YP. Clinical efficacy of pemetrexed combined with nedaplatin in the treatment of lung adenocarcinoma and its effect on tumour markers [J]. Primary Medical Forum, 2022, 26(28):72-74.

Research on the Positivity of "Innovation and Entrepreneurship" Education in Higher Vocational Colleges for the Growth and Development of College Students

Hong Yin
Zibo Vocational Institute, Shandong, China

Abstract: Under the social background of "mass entrepreneurship and innovation", "mass entrepreneurship and innovation" has become the theme of the times and the strategic decision of the country. College students are the main force of innovation and entrepreneurship. In view of the connotation, current situation and existing problems of "mass entrepreneurship and innovation" education in higher vocational colleges, it is proposed that "mass entrepreneurship and innovation" education should be actively integrated into the construction of campus culture, and various construction paths should be adopted, such as the combination of theoretical guidance and simulation practice, the combination of participation in competition and practical platform, and the combination of achievement driving and atmosphere creation. The level and effectiveness of "mass entrepreneurship and innovation" education in colleges and universities are related to the development of higher education and the quality of talent cultivation, as well as the realization of national strategic goals. Therefore, "mass entrepreneurship and innovation" education has become an important content of campus culture construction, and a good campus culture plays a positive role in promoting the growth and success of college students.

Keywords: Vocational Colleges; "Mass Entrepreneurship and Innovation" Education; Growth and Success of College Students

1. INTRODUCTION

The core goal of "mass entrepreneurship and innovation" education is to cultivate the "mass entrepreneurship and innovation" ability of contemporary college students, so that they can inject innovative ability into their own development process in terms of value beliefs. Whether students can possess the "mass entrepreneurship and innovation" ability is closely related to the construction of "mass entrepreneurship and innovation" culture in colleges and universities. For example, schools can promote "mass entrepreneurship and innovation" in the construction of campus culture, encourage students to innovate, and help them establish correct entrepreneurial values, etc. Under the circumstance of the transformation of economic development structure, the improvement of students' "mass entrepreneurship and innovation" ability in vocational colleges is not only the display of educational achievements of vocational colleges, but also the concrete embodiment of "mass entrepreneurship and innovation" culture in vocational colleges. To carry out "mass entrepreneurship and innovation" education in vocational colleges, it is necessary to grasp the key points of "mass entrepreneurship and innovation" culture and deeply understand the positive role of cultural beliefs in the process of shaping people.

2. THE CURRENT STATUS OF "MASS ENTREPRENEURSHIP AND INNOVATION" EDUCATION

2.1 The social level

The implementation of "mass entrepreneurship and innovation" education itself is a manifestation of the responsibility of the times. Building a "mass entrepreneurship and innovation" cultural environment in vocational colleges can better promote the development of "mass entrepreneurship and

innovation" education in these institutions, which is a manifestation of vocational colleges fulfilling their social responsibilities. the construction of "mass entrepreneurship and innovation" culture can, to a certain extent, connect with the socialist core values, enabling the construction of "mass entrepreneurship and innovation" culture to contribute to the better fulfillment of social responsibilities by "mass entrepreneurship and innovation" education. At the same time, the "mass entrepreneurship and innovation" ability of college students can effectively meet the current trend of market innovation and development, allowing fresh blood to be injected into China's social economy.

2.2 The school level.

Higher vocational education, compared to general undergraduate education, is characterized by "combining theory with practice" and emphasizing hands-on skills. There is relatively less emphasis on basic theoretical learning in school teaching, and more attention is paid to practical operational techniques, making the training of technical and skilled talents more targeted. Therefore, the employment rate of vocational college students is an important evaluation criterion for the development of vocational college education. For the "mass entrepreneurship and innovation" education in vocational colleges, the construction of "mass entrepreneurship and innovation" culture can not only expand students' employment directions but also enable schools to cultivate talents according to market demands. It can be further improved on the basis of "mass entrepreneurship and innovation" cultural construction, and better inspire and guide the educational process and educational models for students.

2.3 The student level

During the process of "mass entrepreneurship and innovation", vocational college students may be afraid of the impact of failure and consider whether the success rate of entrepreneurship is conducive to their own employment rate. Therefore, through the construction of "mass entrepreneurship and innovation" culture, students can understand and experience the successes and failures in the entrepreneurial process, which can cultivate their interest in "mass entrepreneurship and innovation" abilities from the bottom of their hearts. To a certain extent, this can guide students to form correct values. Students can also find their own interests in developing innovative abilities and igniting entrepreneurial passion in such a "mass entrepreneurship and innovation" cultural environment. This allows students to be trained in innovative abilities and thinking, satisfying the fundamental needs of high-quality development for contemporary college students.

3. CURRENT STATUS OF INTEGRATION BETWEEN CAMPUS CULTURE AND "MASS ENTREPRENEURSHIP AND INNOVATION" EDUCATION

3.1 Campus culture construction does not attach enough importance to innovation and entrepreneurship abilities

The functional orientation of campus culture is not clear, and the overall planning is inadequate, failing to fully reflect the school-running characteristics of colleges and universities. the cultivation of innovative and entrepreneurial talents has not been integrated into the school's education system, and there is a lack of consciousness in the construction of innovation and entrepreneurship culture. At the school level, there is a lack of top-level design. Although innovation academies have been established, funding is insufficient, there is no dedicated staffing, and there is a lack of innovative and entrepreneurial teachers. the system is not sound, and the institutional framework is imperfect.

3.2 Insufficient teacher participation in campus culture construction

In the construction of campus culture, most emphasis is placed on the role of students as the main actors, while the role of teachers as the main actors is neglected. Some teachers believe that campus culture is the responsibility of students, and the biggest deficiency in campus culture construction is the insufficient participation of teachers. With the advancement of innovation and entrepreneurship education, innovation and entrepreneurship culture has become an important content of campus culture construction. Teachers play a leading role in the construction of innovation and entrepreneurship culture, and they bear the

heavy responsibility of cultural inheritance, imparting new knowledge, and educating people. Campus culture is created jointly by teachers and students, and teachers are the leaders and communicators of campus culture construction. Innovation and entrepreneurship culture, a cultural form that emerges in the context of an innovation and entrepreneurship-driven economy, is characterized by flexibility, interactivity, and permeability. It represents a new orientation for campus culture construction. Teacher groups must actively participate and fully play a leading role in campus culture construction to guide it towards a higher level of development.

3.3 The atmosphere of innovation and entrepreneurship culture on campus is weak, and there is a serious problem of homogenization

Some universities have deviations in their innovation culture concepts, unilaterally believing that entrepreneurship education is targeted at students facing employment difficulties. Coupled with the low success rate of student entrepreneurship, there is a lack of initiative in innovation and entrepreneurship education. Although the forms of campus culture in universities are relatively rich, most of them focus on quantity, scale, and entertainment. Most activities lack innovation, have low quality, and are insufficiently educational. While these activities enrich college students' extracurricular lives to a certain extent, they neglect the quality of innovation, and students' enthusiasm for participation is not high. Campus culture has gradually lost its responsibility and mission to lead the trend of thought, making it difficult to cultivate students' innovation and entrepreneurship abilities through the construction of campus culture. Campus innovation and entrepreneurship activities are severely homogenized and lack localized genes, resulting in low enthusiasm for participation in innovation and entrepreneurship activities among universities.

4. INTEGRATING "MASS ENTREPRENEURSHIP AND INNOVATION" EDUCATION INTO CAMPUS CULTURE TO JOINTLY PROMOTE STUDENTS' GROWTH AND SUCCESS

4.1 Creating a campus culture of "Mass Entrepreneurship and Innovation" education

Campus culture, as an important platform for comprehensive education, is also the engine of innovation and entrepreneurship education. Therefore, only by creating a unique campus culture that highlights innovative functions can a good activity platform be established for cultivating students' innovative qualities. Colleges and universities should focus on the development of campus culture brand projects and special projects, and through continuous innovation and expansion of new ideas, new carriers, and new forms of campus culture construction, form a campus culture atmosphere with distinctive themes to cultivate students' autonomy, standardization, innovation, and development. the construction of a unique campus culture is a "soul-building project. " Schools can focus on building a number of excellent campus cultural positions for teachers and students based on their school orientation, school characteristics, and regional advantages, and create a number of cultural landscapes and facilities with a campus humanistic touch. This will further strengthen the school's educational philosophy, condense the campus spirit, and enhance cultural taste.

4.2 Optimize the cultivation of innovation and entrepreneurship culture

Colleges and universities should lead campus cultural activities with the spirit of innovation and entrepreneurship, cultivate students' values of daring to innovate, stimulate their innovative vitality, and create a cultural atmosphere of independent innovation. To promote the cultivation of innovation and entrepreneurship culture in colleges and universities, it is necessary to proceed from three dimensions: campus spiritual culture, behavioral system culture, and material culture. Firstly, it is essential to establish an ideological system of innovation and entrepreneurship culture to provide the right direction and motivation for innovation and entrepreneurship education. At the same time, set examples to stimulate students' self-awareness of entrepreneurship. Secondly, it is necessary to deeply integrate innovation and entrepreneurship culture with curriculum

culture, professional culture, and even corporate culture, breaking down the boundaries of courses, majors, and schools, and providing a comprehensive cultivation platform for innovation and entrepreneurship culture. Finally, accelerate the construction of tangible facilities for innovation and entrepreneurship culture to provide more carriers for innovation and entrepreneurship activities.

5. CONCLUSION

Campus culture is an important growth environment for college students and the most powerful carrier of innovation and entrepreneurship education. Integrating the construction of campus culture with innovation and entrepreneurship culture not only enriches the campus life of college students but also optimizes the education environment for innovation and entrepreneurship in universities and improves the training level of innovative talents.

REFERENCES

[1] Deng Shuji. On the Current Situation of Campus Culture Construction and Innovation Countermeasure under the Background of "Double Creation" [J]. the Theory and Practice of Innovation and Entrepreneurship, 2019, 2(18):146-147.

[2] Liu Sha. Research on the Strategies of Innovative Entrepreneurship Education for College Students from the Perspective of Campus Culture [J]. Education and Teaching Forum, 2018(43):30-31.

[3] Chen Yan. Research on the Construction of Entrepreneurial Culture in Higher Vocational Colleges under the Background of Mass Entrepreneurship and Innovation [J]. Anhui Science & Technology, 2020(09):39-41.

[4] Li Keqiang. Report on the Work of the Government [EB]. (2015-03-16)[2020-07-08]. http://www, gov, cn/quowuyuan/2015-03/16/content 2835101. htm.

Medical Simulation in Nursing Vocational Education: Applications and Developments

Huaihai Yu
Zibo Vocational Institute, Zibo, China

Abstract: This review article discusses the applications and developments of medical simulation in nursing vocational education. medical simulation utilizes modern technology to create realistic clinical scenarios and simulate patient care processes and hospital environments, replacing real patients for practical teaching. This approach significantly enhances the practicality and innovation of nursing education, fostering students' problem-solving skills and clinical competencies. the article highlights the importance of incorporating simulation teaching into nursing curricula to meet the evolving demands of healthcare.

Keywords: Medical Simulation; Nursing Education; Vocational Training

1. INTRODUCTION

In recent years, the healthcare industry has undergone significant transformations, demanding higher standards of competence and adaptability from healthcare professionals. Nursing education, as a crucial component of healthcare training, must evolve to meet these new challenges and prepare students for the demands of a rapidly changing field. Traditional teaching methods, which often rely heavily on theoretical knowledge and limited practical experience, may not be sufficient to equip nurses with the skills and competencies required to excel in today's healthcare environment.

In response to these demands, medical simulation has emerged as a pivotal tool in nursing vocational education. By providing a controlled, safe, and realistic environment, medical simulation offers a bridge between theoretical knowledge and practical application. It allows nursing students to practice their skills in a simulated clinical setting, enabling them to develop confidence, refine their techniques, and enhance their clinical judgment. This review explores the applications and developments of medical simulation in nursing vocational education [1].

2. APPLICATIONS OF MEDICAL SIMULATION IN NURSING VOCATIONAL EDUCATION

2.1 Enhancing Practical Teaching

Medical simulation creates realistic clinical environments and patient scenarios, allowing students to practice nursing skills in a controlled setting. This enhances the practicality of nursing education, providing students with opportunities to apply theoretical knowledge in practice. Through simulation, students can anticipate and prepare for potential challenges in real-world nursing scenarios, improving their ability to handle emergencies and complex patient cases [2].

2.2 Cultivating Problem-Solving and Innovative Thinking

Simulation teaching encourages students to engage in critical thinking and innovative problem-solving. In simulated clinical scenarios, students encounter various unforeseen challenges, such as managing patient-nurse relationships. These scenarios teach students how to communicate effectively with patients, address their concerns, and establish harmonious patient-nurse relationships. This fosters an environment where students can develop innovative solutions to real-world nursing challenges [3].

2.3 Enhancing Clinical Competencies

Medical simulation provides a safe and controlled environment for students to practice clinical skills. This reduces the risk associated with practicing on real patients and allows students to repeat and refine their skills until they achieve proficiency. Simulation also offers the flexibility to pause and replay scenarios, enabling students to reflect on their performance and identify areas for

improvement, For example, students can practice inserting intravenous lines, performing wound care, and other nursing procedures on simulated patients. This allows them to develop their skills and gain confidence before performing these tasks on real patients. Moreover, simulation medicine can be used to teach complex procedures, such as surgical techniques or emergency responses. By practicing these procedures in a simulated environment, students can develop the necessary skills and judgment to perform them safely and effectively in real-life situations. [4].

3. DEVELOPMENTS IN MEDICAL SIMULATION

3.1 Integration of Technology

Advancements in technology have significantly enhanced the capabilities and reach of medical simulation, revolutionizing the way nursing education is conducted. High-fidelity simulators, which mimic real-life medical scenarios with remarkable accuracy, have become indispensable tools in training future nurses. Furthermore, the integration of virtual reality (VR) and augmented reality (AR) technologies has taken medical simulation to new heights. VR allows students to immerse themselves in fully interactive and lifelike clinical environments, while AR overlays digital information onto the real world, providing additional layers of learning and practice. These cutting-edge technologies not only offer students unparalleled access to realistic clinical experiences but also further bridge the gap between theoretical knowledge and practical application, ensuring that they are better prepared for the demands of real-world nursing practice.

3.2 Standardization and Accreditation

As medical simulation continues to gain traction and become more widespread in nursing education, there is an increasingly urgent need for standardization and accreditation of simulation programs. This process ensures that simulation teaching adheres to rigorous quality standards, fostering consistency and reliability across different educational institutions. Standardization helps in developing a common framework for designing, implementing, and evaluating simulation activities, while accreditation serves as a seal of approval, validating the quality and effectiveness of simulation programs. By undergoing accreditation, nursing education programs can demonstrate their commitment to providing high-quality simulation-based learning experiences that consistently prepare students for the complexities and challenges of real-world nursing practice.

3.3 Collaboration Between Education and Healthcare Providers

The successful development and implementation of medical simulation in nursing education hinge on close collaboration between educational institutions and healthcare providers. Healthcare providers, with their extensive experience and insights into the real-world nursing environment, play a pivotal role in shaping simulation scenarios that accurately reflect the challenges and demands of contemporary nursing practice. By working closely with educators, healthcare professionals can help design simulations that are not only realistic but also relevant, ensuring that students are exposed to scenarios that are likely to arise in their future careers. In turn, educational institutions can leverage their expertise in simulation teaching and research to continuously refine and improve simulation-based learning experiences. This collaborative approach fosters a symbiotic relationship, where both parties contribute to the continuous improvement of nursing education, ultimately leading to the development of a more skilled and competent nursing workforce. [5].

4. CHALLENGES AND LIMITATIONS OF MEDICAL SIMULATION

Despite its benefits in enhancing patient safety, refining clinical skills, and facilitating educational experiences, medical simulation also encounters a series of challenges and limitations that hinder its widespread adoption. Simulation technology can be expensive, a factor that significantly limits its accessibility and integration into some nursing vocational education programs, particularly in resource-constrained settings. This financial barrier often leads to unequal access to simulation-based training, which can exacerbate disparities in healthcare education and proficiency. However, as technological

advancements continue to drive down costs and increase efficiency, there is a promising trend suggesting that the overall expense of medical simulation will gradually decrease, making it more affordable and accessible to a broader range of educational institutions and healthcare providers.

Another limitation of medical simulation is the variability in the fidelity of the simulation technology. Fidelity refers to the realism and accuracy of the simulation in replicating real-life clinical scenarios. the effectiveness of medical simulation in teaching practical skills and clinical judgment can be significantly affected by the fidelity of the simulation. Some simulations may be overly simplistic or unrealistic, failing to provide a meaningful learning experience. Conversely, others may be too complex or overwhelming, causing students to feel intimidated or overwhelmed. Therefore, it is crucial for instructors to carefully select and design simulations that strike the right balance, aligning with their students' learning needs and capabilities. This requires a deep understanding of both the educational objectives and the technological capabilities of the simulations being employed. Medical simulation must be integrated with traditional teaching methods, such as classroom instruction and clinical placements, to be effective. Achieving this integration demands instructors possess a robust understanding of both simulation technology and traditional teaching methodologies. They must be adept at designing lessons that harmoniously blend these two approaches, leveraging the strengths of each to create a comprehensive and engaging educational experience. This integration is not merely a technical task but requires a understanding of pedagogical principles and the ability to adapt and innovate in response to the evolving needs of healthcare education [6].

5. CONCLUSION

Medical simulation stands as a transformative tool in the realm of nursing vocational education, offering unparalleled benefits that extend beyond mere practical teaching. It fosters problem-solving skills, nurtures innovative thinking, and significantly enhances clinical competencies among nursing students. As technological advancements persist and simulation programs achieve greater standardization and accreditation, the central importance of medical simulation in nursing education is set to broaden considerably. Educational institutions and healthcare providers must foster strong collaborations to ensure that simulation teaching evolves in tandem with the changing needs of the healthcare industry. This partnership is essential for developing simulation programs that are not only advanced but also effective, empowering students to tackle the various challenges they will face throughout their nursing careers.

Looking ahead, the use of medical simulation in nursing vocational education is expected to grow and evolve at an accelerated pace. With the relentless march of technological progress, new simulation tools and techniques will emerge, empowering instructors to craft even more realistic and engaging clinical scenarios. These advancements will undoubtedly enrich the learning experience, making it even more immersive and effective. Furthermore, as the healthcare system undergoes continuous transformation, there will be a heightened demand for nurses who possess exceptional problem-solving skills, critical thinking abilities, and clinical judgment. Medical simulation will play an increasingly pivotal role in nurturing these competencies among future nurses, ensuring that they are well-equipped to face the challenges that lie ahead.

Lastly, there is a pressing need for more comprehensive research on the effectiveness of medical simulation in nursing vocational education. Rigorous studies should be conducted to compare the outcomes of students who have undergone training using medical simulation with those who have been instructed through traditional methods. Such research will provide invaluable insights, guiding educators in determining the most effective strategies for integrating medical simulation into nursing vocational education programs. By embracing these research findings and continuously refining our approaches, we can ensure that medical simulation continues to revolutionize nursing education, preparing a skilled and competent workforce for the future of healthcare.

REFERENCES

[1] Yanjie Wang, Xiaohan Li, Yujia Liu, Bei Shi. Mapping the research hotspots and theme trends of simulation in nursing education: A bibliometric analysis from 2005 to 2019 [J]. Nurse Education Today, 2022.105426.

[2] Samar Thabet Jallad, Burçin Işık. the effectiveness of virtual reality simulation as learning strategy in the acquisition of medical skills in nursing education: a systematic review [J]. Irish Journal of Medical Science, 2024 Nov 1; 0(0).

[3] Leena Honkavuo. Ethics simulation in nursing education: Nursing students' experiences [J]. Nursing Ethics, 2024; 12(0):20503121241288169.

[4] Soomin Hong, Insook Cho, Myonghwa Park et al. Simulation Education Incorporating Academic Electronic Medical Records for Undergraduate Nursing Students: A Pilot Study. [J]. Healthcare Informatics Research, 2022.28.4. 376.

[5] Shin, Sujin et al. Effectiveness of patient simulation in nursing education: meta-analysis. [J]. Nurse Education Today, 2015:35, 1, 176-82.

[6] Justine Ting, Anna Garnett, Lorie Donelle. Nursing education and training on electronic health record systems: An integrative review [J]. Nurse Education in Practice, 2021.103168.

The Application of Red-themed Paintings in Patriotism Education in Colleges and Universities Path Exploration

Guoqing Zhang
Zibo Vocational College, Shandong Zibo, China

Abstract: Carrying out patriotism education is one of the important measures for colleges and universities to focus on cultivating the new generation who can take on the great responsibility of national rejuvenation. Red - themed paintings, with rich images and vivid content, show the outstanding qualities and unyielding fighting spirit of the revolutionary predecessors, and can provide abundant resources for patriotism education in colleges and universities. However, there are some problems in the application of red - themed paintings in patriotism education in colleges and universities. To give full play to the important role of red - themed paintings in inheriting the red gene and carrying forward the spirit of patriotism, through innovative paths such as curriculum system innovation, practical activity expansion and campus culture construction, red - themed paintings can be effectively integrated into patriotism education in colleges and universities, improving the effectiveness and appeal of education.

Keywords: Red-themed Paintings; Patriotism education in colleges and universities; Application path

1. INTRODUCTION

The "Implementation Outline for Patriotic Education in the New Era" points out that patriotic education should be integrated throughout the entire process of national education and spiritual civilization construction. [1] Especially in higher education, patriotic education is an important part of cultivating students' correct values and sense of social responsibility. Red - themed paintings, with their vivid images, profound connotations and strong artistic appeal, can provide abundant resources for patriotic education in colleges and universities. However, there are still some problems in the application of red - themed paintings in patriotic education in colleges and universities at present. Therefore, this research aims to explore innovative application paths of red - themed paintings in patriotic education in colleges and universities, tap their value and potential in patriotic education, and provide new ideas and methods for patriotic education in colleges and universities.

2. THE APPLICATION STATUS OF RED-THEMED PAINTINGS IN PATRIOTISM EDUCATION IN COLLEGES AND UNIVERSITIES

2.1 Limitations of Teaching Methods

Although the application of red-themed paintings in patriotism education in colleges and universities has achieved certain results, it also faces some problems and challenges.

At present, in the education of red-themed paintings in colleges and universities, traditional teaching methods still dominate. Teachers often adopt lecture-based teaching, mainly relying on textbook knowledge and picture display, lacking interactivity and innovation. This teaching method is difficult to stimulate students' learning interests and enthusiasm, greatly reducing the educational effect of red-themed paintings. For example, when explaining red-themed painting works, teachers simply introduce the background, author, and artistic features of the works, and students passively accept knowledge, lacking the opportunity for active thinking and exploration. In addition, traditional teaching methods are also difficult to meet the learning needs of different students and cannot achieve personalized teaching.

2.2 Differences in Student Cognition

There are significant differences in the understanding and acceptance of red-themed

paintings among different students. On the one hand, due to differences in students' growth environments, family backgrounds, and personal interests and hobbies, their cognitions and feelings about red-themed paintings are also different. Some students lack understanding and interest in red-themed paintings, believing that these works are too old-fashioned and serious and far from their own lives. On the other hand, there are also differences in students' artistic accomplishments and aesthetic levels, which make it difficult for them to appreciate and understand red-themed painting works. For example, some students lack basic artistic knowledge and aesthetic ability and cannot understand the artistic value and connotations of the works, thus affecting their acceptance of red-themed paintings.

3. THE INNOVATIVE PATH OF RED-THEMED PAINTINGS IN PATRIOTISM EDUCATION IN COLLEGES AND UNIVERSITIES

3.1 Innovation of Curriculum System

In the teaching of art majors, red-themed paintings can be introduced from multiple aspects. For example, in painting basic courses, teachers can use red-themed painting works as examples to explain color application, composition techniques, etc. In creative courses, teachers can assign creative tasks with red themes, encouraging students to deeply understand revolutionary historical events and heroic deeds and draw inspiration from them for creation. For example, with the theme of the War of Resistance against Japanese Aggression, students can understand the arduous environment and the unyielding spirit of the people during the War of Resistance by consulting materials and watching documentaries, and then use the learned painting techniques for creation. In the creative process, teachers can guide students to pay attention to the detailed portrayal, such as the clothing and weapons of the soldiers, as well as the smoke and fire in the battle scene, to make the works more vivid and realistic and enhance the artistic appeal.

Offer elective courses mainly to display representative works of different art forms such as oil paintings, traditional Chinese paintings, and prints, guiding students to understand the artistic styles and ideological connotations of the works. In the course, teachers can select red art works of different periods and styles for analysis and explanation. For example, the traditional Chinese painting "So Beautiful is Our Motherland" shows the vigorous vitality and great image of New China with a grand picture and magnificent mountain and river scenery; the oil painting "The Nanchang Uprising" reproduces the historical moment of the armed uprising led by the Communist Party of China with vivid character images and tense battle scenes; the print "Roar, China" expresses the anger and resistance spirit of the Chinese people against imperialist aggression with strong black and white contrast and exaggerated shapes. Through the appreciation of these works, students can understand the characteristics and expression techniques of different art forms and deeply experience the revolutionary spirit and patriotic feelings conveyed by red art works.

3.2 Expansion of Practical Activities

On-campus red-themed art creation and exhibition have multiple educational effects on students. First of all, organizing red culture-themed art creation activities, such as "Painting Red Stories", can encourage students to reproduce important events in revolutionary history and show the heroic images of revolutionary martyrs through paintings and other forms. In the creative process, students need to deeply understand revolutionary history and dig into historical details, which can not only improve their historical cognitive level but also cultivate their research ability and creativity. For example, when students create painting works with the theme of the Long March, they need to consult a large amount of historical materials, understand the Long March route, important events, and the hard life of the Red Army soldiers, so as to more deeply experience the greatness of the Long March spirit.

In addition, red-themed special lectures and exhibitions by famous artists are also important contents of on-campus art practice. Inviting experts, scholars, and artists in the art field to come to the school for red-themed special lectures and artistic exchanges can broaden students' horizons and enhance their

artistic accomplishments. the lecture content covers the development history of red art, the interpretation of important works, the integration of red culture and modern art, etc., enabling students to have a more in-depth understanding of red-themed paintings.

Off-campus study tours and community services are of great value in cultivating students' patriotic feelings. Organize red culture-themed study tour activities and encourage students to sketch during red tourism to personally experience the historical atmosphere of red culture and draw inspiration for art creation. In the process of on-site sketching, students can deeply experience the authenticity of revolutionary history and the tenacious spirit of the revolutionary spirit by observing and depicting revolutionary sites, monuments, statues of revolutionary martyrs, etc., and enhance their emotional identification with red culture.

3.3 Campus Culture Construction

Clubs, as an important force in the construction of campus culture in colleges and universities, play an irreplaceable role in inheriting the red gene and promoting the spirit of patriotism.

Clubs can carry out a variety of activities with rich forms and profound educational significance. First of all, red art creation activities can be organized. For example, with revolutionary heroic figures as the theme, portrait creation can be carried out. Through the detailed portrayal of heroic figures, their heroic and noble spirits can be shown. In the creative process, members can not only improve their artistic skills but also deeply understand the deeds of heroic figures and arouse patriotic feelings.

The educational significance of these activities lies in that they enrich students' extracurricular lives and enhance students' sense of identity and belonging to red culture. Through participating in club activities, students can have a more in-depth understanding of the connotations and values of red culture and consciously inherit the red gene. On the other hand, they cultivate students' team spirit and innovation ability. In activities such as creation, exhibition, and discussion, students need to cooperate with each other and work together, and at the same time, they also need to exert their creativity to inject new vitality into the activities.

The environment has a subtle influence on people. Therefore, in order to improve the actual effect of patriotic education in colleges and universities in the new era, it is necessary to start with the overall environment and create a strong atmosphere for patriotic education[II]. To create a strong campus atmosphere, efforts can be made from multiple aspects. First, in terms of campus environment layout, display boards, display windows, etc. can be set up on campus to display red-themed painting works, revolutionary historical pictures, and deeds of heroic figures. For example, set up a display area for red-themed paintings in public places such as teaching buildings, libraries, and cafeterias, so that students can feel the influence at any time in their daily study and life.

Secondly, using new media platforms, schools can establish special websites, WeChat official accounts and other new media platforms to release red-themed painting works, red culture knowledge, revolutionary historical stories and other content.

Through the dissemination of new media platforms, the influence can be expanded, allowing more students to understand and pay attention to the stories behind red-themed paintings.

4. CONCLUSION

Red-themed paintings have rich historical recording functions and values in promoting the national spirit. With vivid pictures, profound connotations, and strong artistic appeal, they provide precious resources for patriotism education in colleges and universities. Through paths such as innovating the curriculum system, expanding practical activities, and strengthening campus culture construction, red-themed paintings can be effectively integrated into patriotism education in colleges and universities, improving the effectiveness and appeal of education, cultivating students' patriotic feelings, social responsibility, and innovation spirit, and promoting the all-round development of students.

REFERENCES

[1] Xinhuanet. the Outline of Implementing Patriotic Education in the New Era [EB/OL].

http://www. gov. cn/zhengce/2019 - 11/12/content_5451352. htm, September 4, 2021.
[2] Zhang Yanan. Paths for Colleges and Universities to Implement Patriotic Education in the New Era [J]. China Defense Industry Conversion, 2024, (18):119-121.

The Management Work and Path Optimization of Students in Higher Vocational Colleges Under the Background Of "Double High"

Wei Zhang
Zibo Vocational Institute, Shandong, Zibo, 255300, China

Abstract: At present, in the rapidly changing social environment, higher vocational students are facing unprecedented challenges and opportunities. In order to better adapt to the development of the future society, higher vocational students not only need to master professional knowledge, but also need to have excellent self-management ability. Under the background of "double high", student management in higher vocational colleges is the core element to promote students personal growth and development, which is related to individual study, work, life and other aspects. However, there are still many deficiencies in the student management of higher vocational colleges under the background of "double high". Therefore, it is of great significance to discuss the cultivation and promotion strategies of student management in higher vocational colleges under the background of "double high".

Key words: "Double High" Background; Higher Vocational Colleges; Student Management; Development Path

1. INTRODUCTION

Higher vocational education is an important part of higher education, bear for the socialist modernization construction training high-quality skilled personnel, inheritance and innovation technology skills, promote the key task of the industry development, higher vocational education quality development is building modern vocational education system, realize the modernization of education, building education power, technology power, talent power is the only way. To vigorously improve the quality of vocational education. Strengthening the construction of student management team in higher vocational colleges, strengthening the education position of value guidance and moral education, optimizing the art of student management, and improving the level of student service is not only the direction of student work in higher vocational colleges, but also the inevitable requirement of the high-quality development of vocational education.

2. THE IMPORTANCE OF STUDENT MANAGEMENT IN HIGHER VOCATIONAL COLLEGES UNDER THE BACKGROUND OF "DOUBLE HIGH"

At present, the main contents of student management in higher vocational colleges cover many aspects to ensure the comprehensive development of students, maintain the campus order and create a good learning environment. First of all, student management involves students daily behavior standard education, including the supervision and guidance of students attendance, discipline, health and other aspects, aiming at cultivating students good behavior habits and self-discipline consciousness. Secondly, student management also includes the management of school status, responsible for the handling of students enrollment, transfer, suspension, resumption, graduation and other affairs, to ensure the accuracy and integrity of students information. In addition, the student management work also pays attention to the students ideological and political education, through the organization of various theme activities, lectures and other forms, to guide the students to establish a correct world outlook, outlook on life and values. At the

same time, student management also pays attention to students mental health, providing students with psychological support and help by setting up psychological consultation rooms and organizing mental health lectures.

3. ANALYSIS OF STUDENT MANAGEMENT IN HIGHER VOCATIONAL COLLEGES UNDER THE BACKGROUND OF "DOUBLE HIGH SCHOOL"

3.1 The system and mechanism construction of collaborative education in higher vocational colleges is not complete

At the present stage, the mechanism construction of collaborative education system in some higher vocational colleges needs to be improved, which cannot effectively meet the needs of cultivating people by virtue and educating students first. First of all, the construction of resource sharing channels for collaborative education in higher vocational colleges is not perfect, and there is no comprehensive management platform that can combine student management information and ideological and political performance monitoring, which cannot provide scientific and comprehensive data support for the mechanism of collaborative education. Secondly, the evaluation system and reward mechanism of collaborative education in higher vocational colleges are not perfect. Part of the party and government leaders in higher vocational colleges lack enough attention, collaborative education scheme, short-term goals and long-term goals is not standard, the implementation, evaluation system and reward mechanism is not sound, unable to fully mobilize the participation of teachers and students, lead to collaborative education mechanism cannot long-term operation.

3.2 Management effectiveness needs to be improved

The effectiveness of student management in higher vocational colleges is an important standard to measure its work quality. However, some higher vocational colleges in the student management effect is not satisfactory. First of all, the management information degree is insufficient. At present, some higher vocational colleges still adopt the traditional management means in the student management, and the lack of informatization degree leads to the low management efficiency, and it is difficult to adapt to the needs of modern education. In order to improve the management effect, higher vocational colleges need to actively introduce information management means, improve the efficiency and quality of management, and provide students with more convenient and efficient services.

4. ANALYSIS OF STUDENT MANAGEMENT WORK AND PATH OPTIMIZATION STRATEGY IN HIGHER VOCATIONAL COLLEGES UNDER THE BACKGROUND OF "DOUBLE HIGH"

4.1 Strengthen the system construction and implement the institutional guarantee

The cooperative education of student management and ideological and political education in higher vocational colleges needs to be guaranteed by certain system. First of all, higher vocational colleges should strengthen the top-level design and establish a multi-level, multi-dimensional and network format collaborative education mechanism. Higher vocational colleges should establish a cooperative education mechanism, including school, family and society, strengthen the leadership of the Party, including finance office, logistics support department, academic affairs department, student Department, and the core, and establish a basic student management mechanism including counselors, head teachers, student backbone, dormitory administrators, full-time management teachers, education teachers, etc. Secondly, higher vocational colleges should fully rely on big data technology to establish a student management dynamic monitoring mechanism, early warning mechanism and crisis intervention mechanism, so as to provide early warning services and tracking services for students to avoid crisis events. Thirdly, higher vocational colleges should establish and improve the reward mechanism of collaborative education, encourage teachers to carry out academic research on collaborative education, and provide theoretical support for collaborative education. Finally, the association, with the high education vocational vocational school can be built into

a line. Set the high job appraisal court priceThe school supervisor should supervise the machine association system with the same, the examination of the nuclear department and the examination of the examination and the examination system, the core to seek the education of the original people

4.2 Guide students to participate in management, and enhance their sense of autonomy and sense of responsibility

In the management of students in higher vocational colleges, guiding students has become an important way to participate in the management and enhance their sense of autonomy and responsibility to improve the quality of education and promote students all-round development of education. This concept emphasizes the principal position of students in educational management. Through practical participation, students can have a deeper understanding of the management process, improve their self-management and teamwork ability, and then cultivate talents in the new era with a high sense of responsibility and autonomy. First of all, build a diversified student participation management platform. In order to effectively guide students to participate in management, higher vocational colleges should build diversified student participation management platforms. In addition to traditional student self-governing organizations and student congresses, higher vocational colleges can also set up student advisory committees and student project groups, etc., to provide more opportunities for students to participate in school management. In this way, students can not only exercise their management ability in the actual operation, enhance their sense of autonomy, but also enable them to have a deeper understanding of the management and operation of the school, and enhance their sense of responsibility.

4.3 Introduce the linkage mechanism of professional courses

In general, the employment intention of higher vocational students is often closely related to their majors, so the employment guidance for higher vocational students should establish a permanent linkage mechanism with their professional courses. In addition, even if the special employment guidance courses are established, the guidance effectiveness for higher vocational students. Accordingly, higher vocational educators should bring the comprehensive linkage of professional courses and employment guidance into the scope of employment guidance for higher vocational students, and actively infiltrate the employment guidance components in the teaching of professional courses, so that the help of higher vocational students is more professional, targeted and practical.

tag

Under the background of "double high", the student management in higher vocational colleges is facing unprecedented opportunities and challenges. Through the implementation of a series of strategies and the optimization of the path, we are pleased to see that the student management work has achieved remarkable results in promoting the all-round development of students and improving the quality of education and teaching. Looking into the future, student management in higher vocational colleges still needs to keep pace with the Times and innovate. We should continue to deepen the reform of the management system, strengthen the construction of teachers, improve the rules and regulations, increase capital investment, and establish a long-term feedback and evaluation mechanism. the implementation of these measures will provide a solid guarantee for us to further optimize the student management work path and improve the management level.

reference documentation

REFERENCES

[1] Lv Li. Discussion on the student management method of counselors in higher vocational colleges under the new situation [J]. Knowledge Library, 2021(18):6.

[2] Liu Zheng. Research on Methods and Strategies of Counselor Student Management in Higher Vocational Colleges [J]. Science Fiction Pictorial, 2021(6):12.

[3] Liu Jie. Analysis of the optimization strategy of higher vocational College counselors in student management [J]. Modern Vocational Education, 2021(19):18.

Research on the Cultivation of Artistic Literacy of Architectural Decoration Engineering Technology Students in Higher Vocational Colleges and Universities under Interdisciplinary Perspective

Chenchen Zhao
Zibo Vocational College, Shandong Zibo, China

Abstract: The cultivation of students' artistic literacy in higher vocational colleges and universities is the collective epitome of the cultivation of artistic literacy for all people, and is an important part of the comprehensive development of moral, intellectual, physical, and aesthetic aspects of vocational education. One of the core objectives of the specialty of architectural decoration engineering technology is to create beautiful, comfortable and practical spaces. In this process, aesthetic ability plays a crucial role. Art courses can systematically cultivate students' ability to perceive and apply aesthetic elements such as color, proportion, line and material.

Through the literature study, we analyze the current situation and problems of the art course curriculum of architectural decoration engineering technology, enrich the theoretical system of interdisciplinary education, expand the research field of art literacy cultivation in higher vocational education, and provide theoretical support for the cross-fertilization of disciplines.

Keywords: Interdisciplinary; Artistic Literacy; Architectural Decoration Engineering Technology

1. INTRODUCTION

In modern society, with the rapid development of the economy, there is a growing demand for skilled and practical talents trained by higher vocational colleges and universities. At the same time, with the development of society and fierce competition, the social requirements for such talents are not only to master certain professional skills and technology, but also to improve the comprehensive quality of students and artistic literacy requirements. the cultivation of artistic literacy of higher vocational students is not only a collective epitome of the cultivation of artistic literacy of all people, but also an important part of the overall development of morality, intelligence, physicality and aesthetics. One of the core objectives of the architectural decoration engineering technology program is to create beautiful, comfortable and functional spaces. In this process, aesthetic ability plays a crucial role. Art courses can systematically cultivate students' ability to perceive and apply aesthetic elements such as color, proportion, line and material. As the reform of higher vocational education advances, scholars have begun to pay attention to the application of interdisciplinary education in the specialty of architectural and decorative engineering technology, especially how to integrate art education into science and engineering disciplines.

Through the literature study, the current situation and problems of art curriculum setting in architectural decoration engineering technology majors are analyzed to enrich the theoretical system of interdisciplinary education, expand the research field of art literacy cultivation in higher vocational education, and provide theoretical support for the cross-fertilization of disciplines. Analyze the excellent teaching mode and curriculum design of foreign countries to improve the level of artistic literacy of students majoring in architectural decoration engineering

technology in higher vocational colleges and universities, focus on cultivating students' aesthetic ability, creativity and cultural connotation, so as to equip them with higher comprehensive qualities and stronger vocational competitiveness, and to provide strong support for the cultivation of composite talents with artistic creativity and vocational and technological practical ability.

2. CURRENT STATUS AND DEVELOPMENT TREND OF DOMESTIC RESEARCH

The 19th CPC National Congress puts the people's need for a better life on the agenda, and the cultivation of higher vocational students' artistic literacy is crucial to improving the cultural and artistic qualities of the vocational group and their ability to appreciate and discriminate. the cultivation of artistic literacy of higher vocational students is the collective epitome of the cultivation of artistic literacy of all people, and it is an important part of the comprehensive development of moral, intellectual and physical beauty in vocational education. Under the background of the new era, the research on the cultivation and practice of artistic literacy of students in higher vocational colleges and universities is imperative. In recent years, as the reform of higher vocational education advances, scholars have begun to pay attention to the application of interdisciplinary education in the specialty of architectural and decorative engineering technology, especially how to integrate art education into technical disciplines. It has been shown that art literacy not only enhances students' aesthetic ability, but also promotes the cultivation of innovative thinking. However, most studies have mainly focused on theoretical discussions and have not yet formed a systematic educational model or practical framework.

Art courses are different from traditional courses that impart knowledge, which emphasize more on the accommodation of knowledge, the mobilization of emotions and feelings, as well as the application and re-creation of knowledge. School is an important place to cultivate and enhance students' artistic qualities. However, at this stage, science and technology majors lack attention to art courses. The integration of art and majors often stays at the level of elective courses or auxiliary teaching, and lacks in-depth integration with core courses. Domestic studies on the cultivation of art literacy in higher vocational colleges mostly focus on design majors, with relatively few specialized studies on architectural decoration engineering technology majors. Some studies point out that at present, art courses in higher vocational colleges and universities are mostly in the form of elective courses or supplementary courses, lacking organic integration with technical courses, and the teaching effect is mostly dependent on subjective perception, lacking scientific assessment tools and systematic assessment mechanisms (Wang Hua, 2021).

With the further reform of higher vocational education, the future research trend will pay more attention to the deep integration of art education and technical disciplines. Interdisciplinary education will move from theory to practice, and researchers will pay more attention to how to organically combine art education with architectural decoration engineering technology majors through curriculum, teaching methods and teaching practice, and build a more systematic education model. This model will emphasize the simultaneous improvement of artistic literacy and technical skills, prompting students to achieve balanced development in creativity and practical ability (Chen Qiang, 2021).

Future research will pay more attention to the establishment of a scientific assessment system for artistic literacy, especially the development and application of multidimensional assessment tools. This assessment system will combine quantitative and qualitative analysis to help teachers accurately measure the improvement of students' artistic literacy, creative thinking, and technology application ability, and provide a more scientific teaching feedback mechanism (Jing Wang, 2022). With the development of technology, especially virtual reality (VR), augmented reality (AR), and 3D modeling, these technological tools will be gradually introduced into art education in the future. Through the application of digital tools, the integration of art education and technology

courses will be closer and more efficient.

3. CURRENT STATUS AND DEVELOPMENT TREND OF FOREIGN RESEARCH

In foreign countries, interdisciplinary education, especially in the arts and technology integration research has a more mature foundation. Many scholars pay attention to the application of arts integration in education, emphasizing its importance in enhancing students' comprehensive ability and creativity. In the United States, arts integration has been widely used at all levels of education, especially in basic education and higher education. Many studies have emphasized that arts integration not only helps to improve students' creativity, but also enhances their critical thinking and problem-solving skills (Wlodarczyk, 2021). Ludwig et al. (2017) suggested that arts integration teaching can effectively connect arts and other disciplines, and promote the development of students' multiple intelligences. This approach is considered to be extremely effective in developing students' integrative skills.

Integration of Art and Technology in Vocational Education: In the field of vocational education, especially in art and design related programs, researchers have begun to explore how to effectively integrate art education into technical education. Studies have shown that through interdisciplinary collaboration, students not only acquire specialized skills, but also improve their creative abilities in a hands-on manner (Wan, 2023). Programs such as the Art-Science Intersection Program have demonstrated the effectiveness of combining art and science and provide successful examples of integrating the arts in vocational education (Strokrocki, 2005). Researchers are also exploring new instructional models and curriculum designs to promote the integration of arts education and technology education. For example, in some institutions of higher learning, educators have adopted project-driven learning (PBL) and team-based learning approaches that emphasize student application and collaboration in real-world situations (Francis Academic Press, 2023). This mode of teaching not only enhances students' practical skills, but also their teamwork and communication skills.

Although there has been a certain research base on the integration of art education and technology programs abroad, there are still deficiencies in the establishment of assessment and feedback mechanisms. Scholars have called for the development of systematic assessment tools to quantify the improvement of students' artistic literacy and technological skills (Eric, 2021). Through scientific assessment methods, educators can more accurately understand the effectiveness of teaching and adjust teaching strategies accordingly.

4. CONCLUSION

In summary, with the continuous development of global vocational education, the interdisciplinary integration of art and vocational education has become an important research field.

On the domestic front, after the 19th Party Congress, the importance of art literacy training for higher vocational students has become increasingly prominent, which epitomizes the cultivation of art literacy for all people and is an important part of the comprehensive development of vocational education. With the reform of higher vocational education, scholars have begun to pay attention to the application of interdisciplinary education in this specialty, but the current research is mostly focused on theoretical discussions, the integration of art and technology is not deep, and it is mostly at the level of elective courses or supplemental teaching, and there is a lack of scientific assessment tools and systematic mechanisms. In the future, the trend of domestic research will focus on the deep integration of art education and technical disciplines, constructing a systematic education model from the aspects of curriculum and teaching methods, focusing on the simultaneous enhancement of artistic literacy and technical skills, developing multi-dimensional assessment tools, establishing a scientific assessment system, and introducing intelligent technology in order to realize a closer and more efficient integration of art education and technical courses.

On the foreign side, there is already a more mature foundation for research on

interdisciplinary education, especially the integration of art and technology. Arts integration is widely used in education and is believed to enhance students' comprehensive ability and creativity, connecting arts and other disciplines to promote the development of multiple intelligences. In the field of vocational education, researchers have explored ways of integrating arts education into technology education, such as interdisciplinary cooperation and the adoption of new teaching modes such as project-driven and team-based learning, providing successful cases. However, there are still deficiencies in the establishment of assessment and feedback mechanisms abroad, and systematic assessment tools need to be developed.

There are both achievements and shortcomings in the interdisciplinary integration of art and vocational education at home and abroad, which provide the direction and reference for the subsequent research, and the future should be devoted to constructing a more perfect vocational education system integrating art and science and technology majors, in order to cultivate composite talents with a higher comprehensive quality and vocational competitiveness.

REFERENCES

[1] Xie Jianhua, Deng Bin. Exploration and Innovation of Art Literacy Education in Higher Vocational Colleges and Universities [J]. Popular Literature and Art, 2014(10):246-247. DOI:10.3969/j. issn. 1007-5828.2014.10.211.

[2] Jia Wenliang. Research on methods to improve the artistic literacy of higher vocational students [J]. Journal of Shanxi Energy College, 2017, 30(3):135-137. DOI:10.3969/j. issn. 1008-8881.2017.03.055.

[3] Ji Wenjie. Exploration and practice of curriculum construction of architectural decoration engineering technology in higher vocational colleges and universities [J]. Journal of Shandong Electric Power Higher Specialized School, 2024, 27(1):72-75. DOI:10.3969/j. issn. 1008-3162.2024.01.015.

Cash Flow Management and Strategies for Enhancing Corporate Stability from an Innovative Perspective

Qi Zhao
Zibo Vocational Institute, Shandong, China

Abstract: Nowadays complex and ever-changing business environment, enterprise stability faces many challenges. the stability of enterprises is influenced by various factors, among which cash flow management is crucial. Cash flow is like the blood of a business, and good cash flow management can ensure the normal operation of the enterprise, improve its stability and risk resistance. Currently, research mostly focuses on traditional methods and lacks innovative perspectives. Traditional cash flow management methods can meet the needs of enterprises to a certain extent, but with the changing market environment and the needs of enterprise development, innovative cash flow management strategies have become particularly important.

Keywords: Cash Flow Management; Enterprise Stability; Operational Research

1. RESAEARCH OBJECTICE

This study aims to explore innovative cash flow management strategies to enhance corporate stability. Through in-depth research on cash flow management and corporate stability, practical and feasible innovative strategies are proposed to provide useful references and guidance for enterprises. Specifically, this study will be conducted from the following aspects: firstly, analyze the importance of cash flow management for enterprise stability, and clarify the key position of cash flow management in enterprise operation. Secondly, explore the problems and deficiencies in current enterprise cash flow management, providing a basis for proposing innovative strategies. Finally, based on practical cases, innovative cash flow management strategies are proposed to enhance the stability of the enterprise.

2. THEORETICAL BASIS OF CASH FLOW MANAGEMENT AND ENTERPRISE STABILITY

2.1 Concept and Importance of Cash Flow Management

Cash flow management is the effective planning, control, and supervision of a company's cash inflows and outflows over a certain period of time. It plays a crucial role in the operation, development, and stability of enterprises.

2.1.1 The Significance of Cash Flow for the Survival of Enterprises

Taking some companies that were once glorious but eventually fell into trouble as examples, such as the former mobile phone giant Nokia. In the wave of changes in the smartphone market, Nokia's failure to adjust its strategy in a timely manner has led to a decline in product sales and cash flow problems. When market share is gradually eroded by competitors, the company's cash flow cannot support daily operations such as research and development investment, employee salary payments, etc., ultimately falling into difficulties. This fully demonstrates that cash flow is the lifeline of a company, and once cash flow breaks, the company will face a survival crisis [1].

2.1.2 Impact mechanism of cash flow management on stability

Reasonable cash flow management can enhance a company's ability to resist risks. On the one hand, by accurately predicting and controlling cash inflows and outflows, companies can ensure sufficient funds for daily operations and emergency response. For example, in the face of market fluctuations, rising raw material prices, and other situations, companies with sufficient cash flow can flexibly adjust their procurement strategies to reduce costs. On the other hand, good cash

flow management can enhance a company's financing capability. When a company's cash flow is good, banks and investors are more willing to provide financial support, allowing the company to obtain lower cost financing and further enhance stability.

2.2 Connotation and measurement indicators of enterprise stability

Enterprise stability refers to the ability of an enterprise to maintain continuous operation and resist external risks over a certain period of time. Common measurement indicators include financial condition and non-financial factors.

2.2.1 Analysis of Financial Stability Indicators

The asset liability ratio is an important indicator for measuring a company's long-term debt paying ability. It is generally believed that a debt to asset ratio between 40% and 60% is healthier. For example, if the asset liability ratio of Company A is 50%, it indicates that the company's debt level is relatively reasonable and its financial risk is low. the current ratio reflects a company's short-term debt paying ability, and a current ratio of around 2 is usually more appropriate. If the current ratio of a company is too low, it may face short-term capital turnover difficulties, which will affect the stability of the company.

2.2.2 The impact of non-financial factors on stability

Non financial factors such as corporate culture and management team also play an important role in the stability of enterprises. A positive corporate culture can enhance employee cohesion and sense of belonging, reduce employee turnover, and improve the stability of the enterprise. For example, Google has attracted numerous outstanding talents with its unique corporate culture, high employee loyalty, and provided strong guarantees for the stable development of the enterprise. the quality and ability of the management team are equally crucial. An excellent management team possesses a clear strategic vision and outstanding decision-making ability, capable of leading the enterprise steadily forward in a complex and ever-changing market environment.

3. TRADITIONAL CASH FLOW MANAGEMENT METHODS AND LIMITATIONS

3.1 Analysis of Common Cash Flow Management Strategies

3.1.1 Practice of Developing Cash Flow Plans

Developing detailed cash flow forecasts and plans for enterprises typically involves the following steps. Firstly, determine the sources of cash flow, such as sales revenue, investment income, loans, etc. Enterprises can predict future cash flow sources by examining historical data and market trends, while considering the impact of business cycles, seasonal changes, and other factors on cash flow. Secondly, estimate the size of cash flows. For sales revenue, the expected cash flow can be calculated by forecasting the sales revenue, sales price, and sales quantity of products or services. Finally, consider the time distribution of cash flows and maintain a certain level of cash reserves to cope with unexpected events or opportunities [2].

3.1.2 Challenges and Responses to Accounts Receivable Management

Accounts receivable management faces many challenges. Firstly, there is customer credit risk. Before selling products or services, companies need to evaluate the customer's credit status in order to determine whether credit sales should be granted. If a company fails to properly assess the credit status of its customers, it will increase the risk of bad debts in accounts receivable. For example, when a company cooperates with a new customer, it does not fully understand the customer's credit record and financial situation, and gives a large credit limit. As a result, the customer encounters operational difficulties and is unable to pay the goods on time, leading to an increase in the company's accounts receivable. Maintaining customer relationships is also a challenge. In order to win customer trust and long-term cooperative relationships, enterprises need to provide certain credit discounts and payment terms during the sales process. However, if the company is too lenient, it can lead to customers delaying or not paying their debts. Therefore, companies need to find a balance between customer relationships and account management. For example, when a service company signs a contract with a customer, it clarifies the payment deadline and breach of contract liability. At the same time, through timely

communication and high-quality service during the cooperation process, it enhances customer satisfaction and loyalty, and increases customer willingness to pay.

3.2 Discussion on the Limitations of Traditional Methods

3.2.1 Disadvantages of Lack of Flexibility

Traditional cash flow management methods often lack flexibility in responding to unexpected situations. For example, in the face of force majeure factors such as market fluctuations and natural disasters, traditional cash flow plans may not be able to adjust in a timely manner, leading to a tight financial chain for enterprises. Taking a manufacturing enterprise as an example, due to a sudden increase in raw material prices, the production costs of the enterprise have significantly increased. However, according to traditional cash flow plans, the enterprise does not have enough funds to cope with this change and has to reduce production scale, which has affected the normal operation of the enterprise.

In addition, traditional accounts receivable management methods may also be inadequate when facing sudden financial difficulties from customers. If a customer experiences a business crisis and is unable to pay the goods on time, traditional debt collection measures may not be effective and may even further deteriorate the relationship between the company and the customer. For example, the main customers of a certain enterprise were unable to pay their debts due to poor management caused by fierce market competition. the enterprise pursued them through traditional debt collection processes, resulting in the bankruptcy of the customers and the inability to collect their accounts receivable.

3.2.2 Neglecting Innovation Needs

Traditional cash flow management strategies have not fully considered the new requirements for enterprise development. With the continuous advancement of technology and changes in the market environment, enterprises are facing more opportunities and challenges for innovation. For example, in the digital age, enterprises can utilize technologies such as big data and artificial intelligence to optimize cash flow management, but traditional methods often overlook the application of these innovative means.

4. INNOVATIVE CASH FLOW MANAGEMENT STRATEGIES AND IMPROVEMENT OF ENTERPRISE STABILITY

4.1 Expansion of Diversified Financing Channels

Diversified financing channels are crucial for stable cash flow of enterprises, as they can provide more sources of funding and reduce the risks associated with a single financing method. New financing methods such as crowdfunding and supply chain finance are gradually becoming important choices for corporate financing.

4.1.1 Application Cases of Crowdfunding Model

There have been many successful classic cases of crowdfunding models in China. For example, Meiwei Venture Capital attracted the attention of netizens by selling membership cards on Taobao stores and giving away original shares of Meiwei Media, and raised 800000 yuan within 4 days. Although the behavior was suspended by regulatory authorities due to suspicion of illegal fundraising, it also demonstrates the enormous potential of the crowdfunding model. 3W Coffee adopts a crowdfunding model to raise funds from the public, with each person holding 10 shares at a price of 6000 yuan per share. It has gathered numerous well-known investors, entrepreneurs, and senior management personnel, with a magnificent shareholder lineup, successfully extending the brand to areas such as entrepreneurship incubators. Another unknown small boss sold Baijiu with 100000 yuan in crowdfunding mode, and solved the problem of start-up capital by recruiting shareholders. the first round of crowdfunding raised more than 5 million yuan, and then set up a branch through the crowdfunding mode, obtaining huge cash flow. the advantage of the crowdfunding model is that it can gather funds from numerous investors to provide start-up capital or the funds needed to expand the scale of the enterprise. At the same time, investors can also obtain certain returns or benefits through participating in crowdfunding, achieving a win-win situation [3].

4.1.2 The Stability Role of Supply Chain

Finance

Supply chain finance plays an important role in ensuring stable cash flow for enterprises. Song Hua, a professor of Renmin University of China Business School, pointed out that the essence of supply chain finance is not to solve credit problems, but to help enterprises and industries optimize cash flow. On the industrial side, supply chain finance needs to upgrade from chain to network, break down business and information silos, achieve digital empowerment, and carry out scene innovation, process innovation, and factor innovation. Specifically, shifting from factor finance to scenario finance, focusing on the financial transactions between enterprises, and shifting from controlling asset risks to managing behavioral risks. In practice, supply chain finance can provide financing for small and medium-sized enterprises, alleviate their financing difficulties, and ensure stable cash flow. For example, New Hope Liuhe Group cooperates with commercial banks to carry out supply chain finance business. Last year, it provided a total of 1.1 billion yuan in financing to upstream enterprises. This year, it provided 2 billion yuan in financing to upstream enterprises and over 700 million yuan in financing to downstream enterprises. Supply chain finance reduces financing costs for upstream enterprises, which means lower procurement costs for core enterprises; Provide financial support to downstream enterprises, accelerate the sales of core enterprise products, and enhance the competitiveness of the entire industry chain.

4.2 Application of Digital Cash Flow Management Tools

With the development of technology, the application of big data, artificial intelligence and other technologies in cash flow management is becoming increasingly widespread.

4.2.1 Big data analysis predicts cash flow

Big data analysis can accurately predict cash inflows and outflows. For example, based on the unified allocation of funds, more and more enterprises are achieving the goal of efficient cash management through the "big data+cash flow forecasting" model. On the basis of financial information systems and business information systems, the Treasury Digital Platform combines big data concepts and artificial intelligence algorithms with key factors in cash flow forecasting, transforming business information flows into financial data flows and integrating them with historical data from financial information systems. Through machine learning, an intelligent cash flow forecasting model is formed. Taking Tesla as an example, as a growing enterprise, its asset size and revenue scale have rapidly expanded, but the net cash flow from operating activities is mostly negative in most years. Through big data analysis, we can better understand the cash flow situation of enterprises and provide a basis for formulating reasonable cash flow management strategies.

4.2.2 Artificial Intelligence Assisted Decision Making

Artificial intelligence can provide intelligent decision support for cash flow management. In cash flow management, artificial intelligence technology can play a role in multiple aspects. Natural language processing technology can extract information related to cash flow from textual data such as company annual reports, news, and social media, providing data support for cash flow forecasting; Emotion analysis can understand the market's expectations and emotions towards the company's future development, and predict the trend of cash flow changes; Semantic role labeling can identify entities, events, and their relationships related to a company's cash flow in text, enriching the data dimensions of cash flow forecasting. Machine learning algorithms can classify cash inflows and outflows, discover outliers and patterns through unsupervised learning, and provide risk warning and decision support for cash flow management; Using supervised learning to construct classification models for automatic classification of cash inflows and outflows, improving accuracy and efficiency; Deep learning algorithms can perform deep mining on cash flow data, extracting more useful features and information.

5. CONCLUSIONT

This study delves into the relationship between cash flow management and corporate stability, analyzes the limitations of traditional cash flow management methods, and proposes innovative cash flow management strategies. Innovative strategies include expanding

diversified financing channels and applying digital cash flow management tools, which play an important role in improving the stability of enterprises.

REFERENCES

[1] Yifei Chen. Research on Financial Risk Analysis and Early Warnings in the Chinese Real Estate Industry-Evergrande Real Estate as an Example [J]. Financial Engineering and Risk Management, 2022, 5(5).

[2] Rob Hodgkins, Jo Hodgkins. Late running payments mean cashflow issues [J]. Farmers Weekly Volume, 2019, (29):11-17.

[3] Chen H, S S Yoon. Does Technology Innovation in Finance Alleviate Financing Constraints and Reduce Debt-financing Costs? Evidence from China [J]. Asia Pacific Business Review, 2022, 28(4):467-492.

A Three-dimensional Analysis of the Integration of Red Film and Television Resources into Ideological and Political Education in Universities

Yifan Zhao
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: Red film and television resources have strong characteristics of the times, culture, ideology, and art, and have important value implications for the teaching of ideological and political courses in universities. Universities should fully recognize the educational value of red film and television resources, integrate ideological and political courses in teaching objectives, transform textbook systems into teaching systems in teaching content, and integrate traditional teaching methods with modern technological means in teaching methods.
Keywords: Red Film and Television Resources; Ideological and Political Courses in Universities

1. INTRODUCTION

Red film and television resources refer to the film and television works that reflect the major events, important figures and major achievements of the people led by the CPC in the process of revolution, construction and reform. These film and television works reflect the major events and major achievements of the CPC in the process of Chinese revolution and reform, with distinctive characteristics of the times. Red film and television resources contain a rich spiritual core, which is an important historical witness of the CPC leading the people in the process of revolution, construction and reform, and has distinctive characteristics of the times. College students are builders and successors of the socialist cause. Understanding the rich ideological and political education resources contained in red film and television resources can help college students strengthen their ideals and beliefs, improve their ideological and moral cultivation, and shape correct worldviews, outlooks on life, and values.

2. INTEGRATION OF TEACHING OBJECTIVES

Teaching objectives refer to specific requirements set for teaching content, methods, means, etc. the teaching goal of ideological and political courses in universities should be to cultivate moral character and people, and to achieve the question of "what kind of people to cultivate and how to cultivate them" through ideological and political courses. the red film and television resources have a high degree of compatibility and integration with the teaching objectives of ideological and political courses in universities. Red film and television resources have distinct themes, rich content, and vivid plots, which can help college students deeply understand the basic principles of Marxism, firmly adhere to socialist core values, and cultivate their correct worldview, outlook on life, and values. College ideological and political course teachers should fully recognize the educational value of red film and television resources, actively integrate red film and television resources into ideological and political course teaching, achieve the integration of ideological and political courses, guide students to establish correct worldviews, outlooks on life, and values, and enhance their confidence in the path, theory, and system of socialism with Chinese characteristics.

3. CONVERSION OF TEACHING CONTENT

The teaching content of ideological and

political courses in universities is the foundation and prerequisite for teaching activities, mainly including the transformation from textbook system to teaching system and from theoretical system to teaching system. In the transformation from textbook system to teaching system, teachers can make full use of red film and television resources, combine with the ideological reality of college students, modify and supplement textbooks, transform abstract and boring content into vivid and visual content, and make textbook content more in line with students' cognitive characteristics. In the transformation from theoretical system to teaching system, teachers can use red film and television resources to enrich teaching forms and enhance students' interest in learning. When teaching the basic principles of Marxism, teachers can stimulate students' patriotism and national pride by watching red movies such as "The Founding of the Communist Party". When teaching the introduction of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics, teachers can enhance students' national pride and confidence by watching red movies such as "Amazing, Our Country".

4. INNOVATION IN TEACHING METHODS

In the context of the new era, the teaching methods of ideological and political courses in universities need to be reformed and innovated, emphasizing the combination of theoretical and practical teaching, and stimulating students' interest in learning. Universities can make full use of red film and television resources, create scenarios, and move classrooms to red film and television bases, allowing students to experience the hardships and selfless dedication of revolutionary predecessors firsthand and enhancing the effectiveness of learning. Stories from red film and television resources can also be used to explain major events happening in the country and society, livelihood issues of concern to national leaders, revolutionary spirit left by revolutionary predecessors, etc., allowing students to understand theoretical knowledge through vivid and specific stories. In addition, students can also receive ideological education and value guidance through classic films in red film and television resources. By watching red films and TV shows such as "The Founding of the People's Republic of China, " "The Founding of the Communist Party, " "The Founding of the Army, " and "The Amazing China, " students can gain a deeper understanding of the glorious achievements made since the 70th anniversary of the founding of the People's Republic of China; Through watching red films such as "The Great Cause of the Party" and "The Great Cause of the Army", students can understand the history of the CPC from its initial establishment to its continuous growth.

5. CONCLUSION

The integration of red film and television resources with ideological and political education in universities is based on the collaborative education of ideological and political courses, and is an important way to play the role of the main channel of ideological and political education courses. In the integration of red film and television resources into ideological and political education in universities, teachers should fully recognize the value and implications of red film and television resources for ideological and political education in universities. the goal is to enhance students' political identity, cultural identity, ideological identity, and emotional identity, promote the integration of knowledge and action among college students, focus on enhancing classroom attractiveness and students' learning interest, and support the enrichment of teaching content, innovation of teaching methods, and improvement of the curriculum evaluation system. This will achieve the integration of ideological and political education in courses, the transformation of textbook systems into teaching systems, and the integration of traditional teaching methods and modern technological means. Efforts should be made to explore a new path for ideological and political education in universities that can fully reflect the educational value of red film and television resources, so that students can unconsciously accept the ideological and political content contained in red film and television resources. Educational content, Promote students to form a correct worldview,

outlook on life, and values, and inspire their patriotism and sense of responsibility.

REFERENCE

[1] Xi Jinping: "Speech at the Celebration of the 100th Anniversary of the Founding of the Communist Party of China", Central Literature Publishing House, January 2021 edition, page 282.

[2] Xi Jinping: "On Adhering to the Party's Leadership over All Work", Central Literature Publishing House, June 2021 edition, page 111.

[3] Song Haijing. Three-dimensional exploration of the integration of the great spirit of building the Party into the teaching of ideological and political courses in universities in the new era. Theoretical Guide, 2022, (12):123-127.

[4] Liu Shiyu, Jin Yan Three-dimensional analysis of the integration of "Four Histories" education into ideological and political courses in universities [J]. Reference for Middle School Political Teaching, 2022, (24):54-57.

[5] Zhang Ronghua. Exploration of Methods to Strengthen the Education of "Four Histories" for College Students [J]. School Party Building and Ideological Education, 2021, (14):82-84.

[6] Xu Yishan, Fu Kang. Exploration of the integration of red film and television culture into ideological and political education in universities: taking Anhui Province's red culture as an example [J]. Journal of Chongqing University of Science and Technology (Social Sciences Edition), 2020, (01):113-115.

Exploration into the Comprehensive Reform Practice of Deepening the "Three-pronged Education" in Vocational Colleges

Yanni Zhou
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: Since entering the new era, General Secretary Xi Jinping has put forward clear requirements for strengthening and improving ideological and political work in universities under the new situation, emphasizing the need to adhere to the central link of cultivating morality and talents, and to integrate ideological and political work into the entire process of education and teaching, achieving full staff education, full process education, and all-round education. Zibo Vocational College attaches great importance to ideological and political work, focusing on the fundamental task of cultivating morality and talents. Through deepening the long-term mechanism of "three comprehensive education", integrating multiple elements of education, and building a high-level education team, it deeply promotes the comprehensive reform of "three comprehensive education", creates a comprehensive and three-dimensional education ecology, and strives to cultivate more skilled craftsmen, skilled craftsmen, and high-quality high-level technical and skilled talents from major countries.

Keywords: Vocational Colleges, All-Round Education, And Construction Of Education Teams

1. STRENGTHEN TOP-LEVEL DESIGN AND DEEPEN THE LONG-TERM MECHANISM OF "THREE PRONGED EDUCATION"

1.1 Collaborative linkage to build a "big ideological and political" work pattern

Implement the spirit of the National Conference on Ideological and Political Work in Colleges and Universities and the Opinions of the Central Committee of the Communist Party of China and the State Council on Strengthening and Improving Ideological and Political Work in Colleges and Universities under the New Situation, establish a leading group for the "Three pronged Education" work in schools, and coordinate the ideological and political work of teachers and students; Establish the Party Committee Teacher Work Department to strengthen the ideological and political work of teachers and the construction of teacher ethics and style; Implement the action plan for soul casting and education, clarify responsible departments and individuals, draw a "timetable" and "roadmap", and form a work pattern where the leading department takes overall responsibility and the responsible departments actively cooperate, promoting integration, high quality, and long-term effectiveness.

1.2 Build a comprehensive and three-dimensional education system for talents

We will focus on the fundamental plan of having successors, clarify the direction of education, concentrate the efforts of education, and create a comprehensive and three-dimensional talent training system. One is to be guided by the needs of students' growth and development, integrating the cultivation of students' employment competitiveness and development potential, and achieving a seamless transition from graduation to employment. Secondly, guided by the talent demand of enterprises, we will innovate and explore collaborative education paths such as "dual system", "order based training", "modern apprenticeship system", and "school enterprise integrated cooperative education". the third is to strengthen the collaborative education role of the "six in one" approach. Give full play to the main channel of school education, the foundation of family education, the platform of community education, the collaborative education of enterprises, the exemplary and leading role of teachers, and the subjective initiative of students, and create

effective models of collaborative education such as "Parent Reception Day", "Skill Training in Communities", "School Enterprise Cooperation Class", and "Teacher Student Pairing Assistance".

2. STRENGTHEN THE INTEGRATION OF EDUCATIONAL ELEMENTS AND BUILD A NEW ECOLOGY OF "EDUCATING PEOPLE AT ALL TIMES, IN ALL THINGS, AND EVERYWHERE"

2.1 Integrating classroom teaching and cultural immersion, guiding students to develop moral character and become adults

Enhance the effectiveness of curriculum education, adhere to the dual integration of ideological and political courses with curriculum ideology, and professional teaching with ideological and political education, establish dual connections between Marxist colleges and teaching departments, and between ideological and political teachers and professional teachers, and create demonstration classrooms for ideological and political courses and professional courses.

Carefully create cultural brand activities such as "Youth Story Sharing Conference", "Red Lecture Hall", and "Jiao Yulu Spirit Enters Campus", promote socialist core values, and strengthen education on ideals and beliefs. Relying on the advantages of departmental and professional education, integrating industry and enterprise development achievements and advanced culture, creating a distinctive brand of campus cultural and artistic festivals, and enhancing students' sense of identity and pride in the prosperity, strength, and high-quality development of the country. Build and utilize art venues on campus, inherit excellent traditional culture, and strengthen education on ideals and beliefs.

2.2 Integrating scientific research education and practical training, focusing on improving students' innovative and practical abilities

Build a technology and skill innovation team composed of teachers, students, and enterprise personnel, and guide teachers and students to timely grasp the latest developments in industry technology. Build a "industry university research innovation and training" talent cultivation and technological innovation platform, an industry education integration platform that focuses on serving regional development, and a technology skills platform that focuses on serving industry development, to cultivate the scientific spirit and innovation consciousness of teachers and students.

By using e-commerce to assist agriculture, medical care, and health care, we will establish a "one system, one place" volunteer service base, create the "Zixiaoqing" volunteer service brand, focus on employment security, rural art education, urban and rural environmental improvement projects, carry out school land joint construction, and build a practical education community that collaborates with schools and society.

2.3 Integrating modern governance and intelligent services, focusing on enhancing the sense of belonging between teachers and students

Implement the principal responsibility system under the leadership of the Party committee, improve the "1+5" governance system with diverse participation from the expert advisory committee, council, academic committee, faculty representative assembly, and student representative assembly, establish a "five meetings" contact system, smooth supervision channels, improve information disclosure system, and enhance teacher and student satisfaction.

Accelerate the construction of 5G campuses, promote the deep integration of information technology and teaching applications, and enable students to learn independently, serving the personalized learning and growth needs of students in the digital age. Optimize the big data application functions of the Student Development Center and build an information platform for students' self-education, self-management, and self-service. Optimize data mining to achieve seamless integration of apartment management system, student engineering system, and monitoring system, ensuring intelligent full-time services.

2.4 Integrating organizational effectiveness and network platforms, striving to create a positive energy distribution center that is close to students

Give full play to the core leadership role of the Party committee, coordinate resources and forces from all aspects, strengthen system design such as institutional mechanisms, project layout, and team building, regularly

analyze the situation in the ideological and political fields, and coordinate the implementation of key tasks. Implement the "Dual Leader" Training Project for Teacher Party Branch Secretaries and the "Party Member Backbone" Dual Training Plan to enhance the political leadership of departmental party organizations. Establish a "full-time" management and education mechanism for active party members and development targets, and improve the quality of party member development.

Build a strong network ideological and political education platform, establish a collaborative mechanism for theoretical armament, public opinion guidance, cultural guidance, and civilization creation in network ideological and political education work, make good use of online platforms such as Yiban. com and China University Student Online, strengthen cooperation with authoritative media such as Xinhua News Agency Shandong Center and Shandong Education Television Station, establish a school new media work alliance, and build a "Two Micro, One Douyin, One Number" network ideological and political media matrix. Relying on the New Media Work Center of the Shandong University Network Ideological and Political Work Sub center, we will strengthen research on network ideological and political work, establish online columns such as "Ideological and Political Micro Classroom" and "New Era New Youth", and effectively leverage the dissemination advantages of network cultural products.

2.5 Integrating development-oriented funding and protective psychological assistance, focusing on cultivating inspiring and sunny youth

Carry out development-oriented funding activities such as the "Wing Project" and "Top Ten Inspirational Students" selection, "Love Transmission" inspirational gratitude education, and "Know the Party's Grace, Feel the Party's Grace, Follow the Party" discussion and exchange, to guide students to strive for self-improvement, enhance their sense of social responsibility, and strengthen their confidence and determination to listen to the Party and follow the Party.

Build a "Sunshine Psychology" education brand, establish a demonstration center for college students' mental health, build a network system for mental health education, regularly conduct psychological surveys and "Positive Psychology Lecture Hall" activities, form a long-term work model for psychological crisis prevention and intervention, and make every effort to improve students' mental health level.

3. CONCENTRATE EFFORTS, CREATE A HIGH-LEVEL EDUCATION TEAM THROUGH HIERARCHICAL CLASSIFICATION

3.1 Strengthen the construction of teacher ethics and style

Highlight political standards and take the ideological and political assessment as the primary basis for talent introduction. Select outstanding teachers, establish renowned teacher lecture halls, organize teacher ethics and style report meetings, and play a leading role as role models. Incorporate teacher ethics and style training into the teacher training system. Establish personal credit records and a negative list of teacher ethics, and define the red line of teacher ethics. Incorporate the standards for assessing teacher ethics into the annual assessment, professional title (position) evaluation, and recommendation for excellence, and implement a "one vote veto" system for violations of teacher ethics and conduct.

3.2 Building a strong team of high-level educators

One is to leverage the leading role of the Party committee. the main leaders of the Party committee take the lead in promoting the "three-pronged education", and members of the leadership team often go deep into the front line to listen to and give ideological and political courses, actively participating in talent cultivation. Make full use of channels such as student principal assistants and school leaders' reception days to deeply connect with teachers and students. the second is to focus on building the "main force" of ideological and political work. Implement the plan to enhance the ideological and political quality of teachers, provide sufficient and strong teams of ideological and political course teachers, counselors (class teachers), and mental health teachers, optimize the

assessment and promotion mechanism for ideological and political course teachers and counselors, and implement the "two separate lists" for professional title evaluation. the third is to cultivate high-quality and specialized "four haves" teachers. Promote the construction of a curriculum ideological and political teaching team jointly formed by ideological and political course teachers and professional course teachers, deeply explore the ideological and cultural elements contained in professional courses, regularly carry out curriculum ideological and political research activities, integrate excellent traditional culture into curriculum ideological and political training activities, enhance teachers' awareness of curriculum ideological and political construction, teaching design and reform implementation ability. the fourth is to strengthen the performance and responsibility of management and service cadres, clarify the educational responsibilities of teachers in various management and service positions, and incorporate the implementation of educational responsibilities into the performance evaluation method for the "all staff education" position. the fifth is to give full play to the exemplary role of student backbone. Carefully organize brand activities such as "Moral Lecture Hall", "Green Role Models", and "The Story of the Academy" to inspire students to benchmark and surpass themselves. the sixth is to give full play to the exemplary role of craftsmen and talents. Establish a normalized mechanism for entrepreneurs, model workers, and industrial workers to enter schools, and continuously cultivate students' craftsmanship spirit through motivational lectures, skill guidance, mentor appointment, and labor education base construction.

REFERENCE

[1] Hongbo Li, Xiuna Dong. Collaboration, Connection, and Integration: Building a New Pattern of Integrated "Three-pronged Education". China Higher Education, 2021(21):36-38.

[2] WeiZuo. China Unicom, Connectivity, and Integration: Deepening the Reform of "Three-Pronged Education". Study on the ideological and political work, 2021(02):26-28.

Exploring Effective Teaching Strategies in College English Education

Jing Zheng
Jingdezhen Ceramic University, Jingdezhen 333403, Jiangxi, China

Abstract: This study aims to explore effective teaching strategies in college English education to enhance teaching outcomes and students' comprehensive language abilities. Addressing common issues such as monotonous teaching methods, low learning interest, and limited language proficiency improvement, this paper systematically reviews relevant domestic and international research. It proposes feasible teaching strategies based on the current state of college English education. Research methods mainly include literature analysis and theoretical discussion, incorporating language education theories such as the Input Hypothesis, Output Hypothesis, and Interaction Hypothesis. The study thoroughly examines classroom teaching, reading, writing, speaking, and listening strategies, outlining their characteristics and application methods. Optimization suggestions are made based on language acquisition theories and teaching practices. Findings indicate that integrating multiple teaching strategies significantly enhances students' language application abilities and learning enthusiasm. Incorporating information technology, such as multimedia teaching and online learning platforms, further increases interactivity and flexibility, promoting autonomous learning and comprehensive language skill development. In conclusion, this paper provides valuable guidance for college English teachers and offers theoretical and practical references for future research.

Keywords: College English Education; Teaching Strategies; Language Proficiency; Literature Review; Theoretical Discussion

1. INTRODUCTION

1.1 Research Background and Significance

In the context of globalization, college English education has become increasingly critical. As international communication becomes more frequent, the importance of English as a universal language is undeniable. College English education is not only pivotal for developing students' language skills but also for enhancing their overall competencies. However, current challenges in college English education, such as monotonous teaching methods, low learning interest, and limited language proficiency, hinder teaching effectiveness. Therefore, exploring effective teaching strategies is imperative.

1.2 Review of Domestic and International Research

Extensive research on teaching strategies in college English education has been conducted both domestically and internationally. International research primarily focuses on the application of language acquisition theories, such as Krashen's Input Hypothesis, Swain's Output Hypothesis, and Long's Interaction Hypothesis, providing a theoretical foundation for college English teaching. Domestic research tends to emphasize the practice and application of specific teaching strategies, such as multimedia teaching and task-based learning. Despite the abundance of research, effectively integrating these theories and practices in actual teaching scenarios remains a challenge.

1.3 Research Objectives and Methods

This study aims to propose feasible teaching strategies by systematically reviewing relevant research and considering the current state of college English education. The primary research methods include literature analysis and theoretical discussion. By organizing and analyzing existing literature and combining it with language education theories, the study delves into the intrinsic mechanisms of different teaching strategies and their impact on teaching outcomes.

2. MAJOR ISSUES IN COLLEGE ENGLISH EDUCATION

2.1 Monotonous Teaching Methods

Traditional lecture-based teaching still dominates current college English education. Although this method has certain advantages in knowledge transmission, it falls short in developing students' language application and autonomous learning abilities. Teachers primarily focus on grammar and vocabulary explanations. As a result, students passively receive knowledge with limited active participation opportunities. This monotonous teaching approach fails to stimulate students' interest, leading to poor teaching outcomes.

2.2 Low Learning Interest

Another prominent issue in college English teaching is the low level of learning interest. Many students find English learning dull and perceive it as having little practical value, leading to a lack of enthusiasm and initiative in their studies, thereby adversely affecting learning outcomes. Research indicates that learning interest is closely linked to learning effectiveness; only by stimulating students' interest can their learning outcomes be improved (Dong & Cheng, 2002).

2.3 Limited Language Proficiency Improvement

Despite undergoing systematic English education during university, many students still struggle to use English fluently upon graduation. This phenomenon highlights the shortcomings of current college English teaching in developing students' language application abilities. Classroom activities often focus on grammar and vocabulary, with minimal opportunities for practical application, limiting students' language proficiency development.

3. THEORETICAL FOUNDATIONS

3.1 Input Hypothesis

Krashen's Input Hypothesis posits that language acquisition occurs primarily through comprehensible input. When students encounter language input slightly above their current proficiency level, they can acquire new language knowledge through comprehension. In college English teaching, teachers should emphasize providing rich language input, such as reading and listening materials, to help students acquire new language knowledge based on understanding.

3.2 Output Hypothesis

Swain's Output Hypothesis highlights the importance of language output in language acquisition. Through using the language in communication, students gradually master language usage rules by continually trying and adjusting. In college English teaching, teachers should create more opportunities for language output, such as speaking and writing exercises, to help students master the language through actual use.

3.3 Interaction Hypothesis

Long's Interaction Hypothesis asserts that language acquisition occurs primarily through interaction. Through engaging in language exchanges with others, students can continually adjust and improve their language use based on interaction and feedback. In college English teaching, teachers should emphasize classroom interaction, such as group discussions and role-playing, to help students acquire language through interactive activities.

4. EXPLORING EFFECTIVE TEACHING STRATEGIES

4.1 Classroom Teaching Strategies

Teachers should employ diverse teaching methods to stimulate student interest and participation. Task-based teaching, which involves designing specific tasks such as group discussions and project collaborations, helps students not only acquire language knowledge but also enhance their application skills. Additionally, situational teaching, which creates real or simulated language scenarios, enables students to practice language use in context.

4.2 Reading Strategies

Reading is crucial in college English education for expanding vocabulary and improving comprehension. Teachers should focus on cultivating reading strategies such as prediction, inference, and summary. Guiding students to use these strategies during reading can enhance their efficiency and understanding. Selecting appropriate reading materials that challenge students while maintaining their interest is also essential.

4.3 Writing Strategies

Writing is another key component, essential for improving language expression and logical thinking. Teachers should develop students' writing strategies, including brainstorming,

organizing, and revising. Providing timely feedback and guidance helps students continually improve their writing skills and quality.

4.4 Speaking Strategies

Speaking practice is vital for enhancing language expression and communication skills. Teachers should create ample opportunities for speaking activities like group discussions, role-playing, and presentations. These exercises help students master language use rules and improve their speaking abilities. Providing timely feedback and guidance is crucial for continuous improvement.

4.5 Listening Strategies

Listening exercises are important for enhancing language comprehension and listening skills. Teachers should develop students' listening strategies, such as prediction, inference, and summary. Guiding students to use these strategies during listening exercises can improve their efficiency and understanding. Selecting suitable listening materials that challenge and interest students is also important.

5. APPLICATION OF INFORMATION TECHNOLOGY IN COLLEGE ENGLISH TEACHING

5.1 Multimedia Teaching

Multimedia teaching is a significant method that offers rich language input through videos, audio, and images, helping students acquire language knowledge through multi-sensory stimulation. It also enhances classroom interactivity and interest, motivating students to participate actively.

5.2 Online Learning Platforms

Online learning platforms break time and space constraints, allowing students to learn anytime, anywhere. Teachers can provide abundant resources, such as lecture slides, videos, and exercises, to support autonomous learning. These platforms also offer instant feedback and guidance, aiding continuous improvement.

5.3 Interactive Teaching Tools

Interactive teaching tools, such as online discussions and real-time Q&A, enhance classroom interactivity and participation. These tools help students acquire language knowledge through interaction, improving their application and communication skills.

6. OPTIMIZATION SUGGESTIONS FOR TEACHING STRATEGIES

6.1 Integrating Multiple Teaching Strategies

Teachers should integrate various teaching strategies to improve teaching outcomes and students' comprehensive language abilities. Combining classroom, reading, writing, speaking, and listening strategies can holistically enhance students' language application abilities and learning motivation.

6.2 Enhancing Teaching Interactivity

Increasing teaching interactivity through diverse methods such as group discussions, role-playing, and online interactions can boost student participation and learning outcomes. Interaction helps students master language use rules in practical contexts.

6.3 Promoting Autonomous Learning

Teachers should foster autonomous learning by providing abundant resources and guidance. Autonomous learning allows students to flexibly arrange their study time and content according to their needs and pace, improving their efficiency and outcomes.

7. CONCLUSION

This study systematically reviews relevant research and proposes feasible teaching strategies based on the current state of college English education. Findings indicate that integrating multiple teaching strategies significantly enhances students' language application abilities and learning enthusiasm. Incorporating information technology, such as multimedia teaching and online learning platforms, further increases interactivity and flexibility, promoting autonomous learning and comprehensive language skill development. This study provides valuable guidance for college English teachers and offers theoretical and practical references for future research. Exploring the intrinsic mechanisms of different teaching strategies and their impact on teaching outcomes can strongly support the optimization of college English teaching.

REFERENCES

[1] Dong Juan, Cheng Yuefang. Teaching Learning Strategies in College English Teaching [J]. Journal of University of Shanghai for Science and Technology: Social Science Edition, 2002, 24(2):4. DOI:

CNKI:SUN:SHLG.0.2002-02-013.
[2] Yu Yanhua. The Loss of Native Culture in College English Teaching and Its Rescue Strategies [J]. Educational Exploration, 2010(7):2. DOI: CNKI:SUN:SEEK.0.2010-07-034.
[3] Fang Yan. Strategy Innovation in College English Teaching—Review of "English Classroom Teaching Strategies: How to Effectively Choose and Use" [J]. Jiangxi Social Sciences, 2017, 37(7):1. DOI: CNKI:SUN:JXSH.0.2017-07-042.
[4] Li Jianbing. Research on Effective Teaching Strategies in High School English [D]. Guangzhou University [2024-09-19].
[5] Xu Jia, Cao Hui. On Strategies in College English Classroom Teaching [J]. Path to Success, 2008(19):2.
[6] Cheng Yanqun. Exploration of Efficient Teaching Strategies in College English [J]. Global Philanthropy, 2023(6):0055-0057.
[7] Zhao Hongwei. Discussion on College English Classroom Teaching Strategies [J]. English Square, 2016. DOI: 10.16723/j.cnki.yygc.2016.02.077.
[8] Qiao Jianye. On the Realization Strategies of Effectiveness in College English Teaching—Taking Border Defense English Classroom Teaching as an Example [J]. Journal of Inner Mongolia Agricultural University: Social Science Edition, 2011, 13(4):3. DOI: 10.3969/j.issn.1009-4458.2011.04.057.
[9] Liu Yu. Application of Metacognitive Theory in College English Reading Teaching [J]. Journal of Jilin Provincial College of Education: Academic Edition, 2014(008):030.

Ideological and Political Elements in Cultural and Creative Products: Social Responsibility and Value Orientation of the Cultural Creative Industry

Yao Dong
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: This study explores the integration of ideological and political (I&P) elements in cultural and creative products, analyzing the social responsibility and value orientation of the cultural creative industry. In a globalized context, this industry not only drives economic growth but also plays a crucial role in building cultural soft power. Incorporating I&P elements in creative products enhances cultural confidence and fosters national identity. Using literature review and theoretical analysis, this paper examines academic studies and practical cases, focusing on product design and practice from a curriculum-based ideological perspective. The study identifies core components and manifestations of I&P elements in the industry, exploring their application in product design and marketing. By systematically reviewing interdisciplinary literature, a theoretical framework is developed to elucidate the role and positioning of I&P elements in creative products. Findings indicate that these elements not only enhance cultural value but effectively convey social positivity and promote core socialist values. This has significant educational and societal impacts, reinforcing the industry's social responsibility. The study emphasizes the need for systematic integration of I&P elements in policy and practice, suggesting future industry development focus on realizing social and cultural functions to enrich the depth and educational significance of creative products.

Keywords: Cultural Creative Products; Ideological and Political Elements; Cultural Creative Industry; Social Responsibility; Value Orientation

1. INTRODUCTION

1.1 Research Background

The cultural creative industry has rapidly emerged amidst globalization, becoming a significant embodiment of national soft power. In China, alongside economic restructuring and enhanced cultural confidence, cultural and creative products have increasingly vital roles in the market. These products not only fulfill the public's aspirations for a better life but also serve as key channels for conveying culture and values. Currently, integrating ideological and political (I&P) elements into creative products to imbue them with deeper cultural significance and value orientation has become a focal point for academia and industry. With continuous enhancement of cultural industry policies, the practice of embedding I&P elements in cultural products has increased, offering new avenues for promoting socialist core values.

1.2 Research Objectives and Significance

This study aims to explore effective ways to integrate I&P elements into cultural products and analyze their impact on the social responsibility of the cultural creative industry and potential pathways for realizing these value orientations. Through systematic research, the study aims to clarify the role of cultural products in cultural transmission and value guidance, promoting a balance between economic and social benefits in the cultural creative industry. This research offers practical guidance for creative enterprises and theoretical support for policymakers. Under today's complex international environment, enhancing the ideological attributes of creative products can boost national cultural soft power and international discourse.

1.3 Review of Domestic and International Research

Existing research predominantly focuses on the economic value and market potential of creative products, with less emphasis on their social functions and ideological roles. Internationally, studies often examine creative economy development paths and the international competitiveness of cultural industries, such as the UK's creative industry policies and the US's cultural exports. However, research on I&P elements in creative products is scarce. In China, with the introduction of socialist core values, scholars are recognizing the importance of cultural products in spreading social values, such as through museum product development that promotes traditional culture and interdisciplinary research integrating I&P elements into cultural production and dissemination processes.

2. THEORETICAL FOUNDATION

2.1 Definition and Characteristics of Cultural Creative Products

Cultural creative products are new types of products combining creative design with cultural elements, characterized by artistry, functionality, and cultural significance. They include traditional crafts, souvenirs, digital media, films, and art designs. Beyond economic benefits, their value lies in their rich cultural content and innovative expression. Globally, countries emphasize harnessing cultural brands to enhance national image and competitiveness, with creative products becoming key national cultural symbols. In design, these products emphasize innovation and tradition, using modern technologies to present diverse cultural content.

2.2 Connotation and Role of Ideological and Political Elements

Broadly, I&P elements refer to political thoughts and values manifested in products, content, or activities. In education, these elements foster political consciousness and moral qualities. In creative products, they embody national spirit, contemporary ethos, and socialist core values, enriching cultural depth and guiding consumer values. By subtly influencing cultural identity and value judgments, they play an educational role. Effectively integrating I&P elements into product design, balancing enjoyment with education, is a key challenge for the creative industry.

2.3 Social Responsibility and Value Orientation of the Cultural Creative Industry

As a burgeoning economic force, the cultural creative industry carries social responsibilities like promoting cultural diversity and social progress. Value orientation involves balancing economic gains with social values. With a positive value orientation, creative products can become vital mediums for mainstream value dissemination, enhancing public cultural awareness and confidence. As societal demands for cultural products diversify, the industry must generate economic benefits while considering impacts on social and cultural environments. Particularly with digitalization, the industry should guide proper values and foster social harmony.

3. CORE COMPONENTS OF IDEOLOGICAL AND POLITICAL ELEMENTS IN CREATIVE PRODUCTS

3.1 Manifestations of Ideological and Political Elements

I&P elements manifest diversely in creative products, forming their design soul and value core. They prominently feature in well-themed and content-rich designs. By integrating themes like patriotism and national spirit, products, such as culturally themed souvenirs or historically based films, convey deep cultural meanings. Visual elements like color and symbols convey I&P content, with red often symbolizing revolutionary spirit and specific motifs expressing strong cultural identity.

Material choices also reflect I&P elements, using traditional crafts or local materials to enhance regional characteristics and show respect for cultural heritage. Modern technologies enable varied and vivid presentations, using virtual reality to immerse users in historical scenes, boosting products' educational and interactive aspects.

3.2 Functions and Impact of Ideological and Political Elements

I&P elements in creative products serve not only decorative purposes but also guide and educate. They subtly influence consumers'

value perceptions, reinforcing cultural identity, especially in a globalized context, helping regain pride in local culture. They play a social educational role, deeply impacting especially young audiences' worldviews and life perspectives through conveyed values.

Their impact extends internationally, as cultural exports showcase national soft power and values, enhancing national image. Effective integration also boosts market competitiveness, adding value and securing a market position for cultural products.

4. APPLICATION OF IDEOLOGICAL AND POLITICAL ELEMENTS IN PRODUCT DESIGN

4.1 Integration Strategies in Product Design

Integrating I&P elements requires designers' cultural sensitivity and creativity. Design should consider the target audience and market positioning, cleverly combining contemporary spirit with national characteristics. Designers can gather consumer insights to ensure effective expression of I&P elements. Cross-disciplinary collaboration can spark diverse design ideas.

Design strategies should emphasize implicit conveyance, avoiding rigid expressions. Storytelling techniques can embed I&P elements in product narratives, creating emotional resonance and drawing consumers closer, not just visually but also emotionally.

4.2 Application Mechanisms in Marketing and Communication

Effective communication of I&P elements is crucial for product success. Integrated marketing strategies can use various media channels to convey I&P content to potential consumers. Digital media offers new opportunities, with social platforms enabling wide, precise audience reach.

Experiential marketing also proves effective, with events or interactive exhibits allowing consumers to experience the I&P content firsthand, deepening understanding and appreciation. Utilizing influencers can enhance brand identity and I&P content dissemination, leveraging their reach to strengthen brand cultural identity and I&P communication efficacy.

5. POLICIES AND PRACTICES IN THE CULTURAL CREATIVE INDUSTRY

5.1 Analysis of Relevant Policies

Government policies play a crucial role in advancing the cultural creative industry and incorporating ideological and political (I&P) elements. Through measures like tax incentives, financial support, and talent development programs, governments provide a supportive environment for the industry's growth. Policymakers also guide the content direction of creative enterprises to ensure the positivity and correctness of I&P elements. For instance, by establishing cultural industry funds, governments can support projects with significant social educational value and cultural impact.

Implementing these policies requires ongoing evaluation and adjustments to reflect market changes and consumer needs. By collaborating with industry experts and scholars, policymakers can enhance the scientific and systematic nature of these policies, further promoting the application of I&P elements in creative products.

5.2 Analysis of Successful Industry Practices

Successful practices within the cultural creative industry offer valuable insights into the application of I&P elements. Some cultural enterprises, for example, collaborate with museums and cultural sites to develop products with historical educational significance, which have been warmly received by the market. These products not only integrate rich I&P elements in their design but also employ diverse marketing strategies to attract consumers of various age groups.

Additionally, some companies elevate I&P elements to core brand values, thereby enhancing brand competitiveness. Through partnerships with educational institutions and cultural organizations, businesses can expand product applications, combining cultural creativity with ideological education for mutually beneficial outcomes.

6. SOCIAL IMPACT OF CREATIVE PRODUCTS AND IDEOLOGICAL ELEMENTS

6.1 Impact on Cultural Identity and National Cohesion

Incorporating I&P elements into creative products effectively enhances cultural identity and national cohesion. Amid globalization, local cultures face challenges from foreign influences, and I&P elements in creative products become vital in promoting national spirit and cultural confidence. This enhanced cultural identity, especially among younger generations, helps resist foreign cultural encroachments, fostering stronger cultural confidence.

The application of I&P elements in creative products yields positive social impacts. During significant festivals and commemorations, products with ideological content can evoke patriotism and collective memory, such as the Chinese-themed souvenirs during the Beijing Winter Olympics, which were popular domestically and served as an international showcase of cultural charm.

6.2 Impact on the Dissemination of Socialist Core Values

As cultural carriers, creative products subtly promote socialist core values. Through innovative and attractive designs, I&P elements integrate smoothly into consumers' daily lives, influencing their value orientations and behaviors. Especially among the youth, this subtle dissemination aids in shaping a positive worldview and life perspective.

The international dissemination of creative products also offers new perspectives for the global spread of socialist core values. Through cultural exports and international exchanges, creative products embed Chinese values in the global cultural market, enhancing China's international cultural influence and recognition.

7. CONCLUSIONS

Research on I&P elements in creative products reveals that the cultural creative industry holds significant economic and social responsibilities. Effective integration of I&P elements enhances the cultural value and market competitiveness of creative products, playing a positive role in social identity and cultural dissemination. As a vital vehicle for ideological education, creative products are irreplaceable in promoting cultural identity and value propagation.

Policymakers should continue to optimize the development environment of the cultural creative industry, providing targeted policy support and encouraging more I&P elements in creative products. Industry associations and educational institutions can act as bridges, facilitating partnerships between enterprises and cultural organizations to foster innovative applications of I&P elements. Additionally, companies should conduct market research to grasp trends and consumer preferences for I&P elements, ensuring innovative and market-responsive product designs.

Future research could explore the cross-cultural application of I&P elements, focusing on international consumers' acceptance in diverse cultural contexts. With technological advancements, the role of emerging technologies in disseminating I&P elements warrants in-depth study. Multidimensional research will offer theoretical support and practical guidance for the industry's development, paving new paths for innovation in cultural creative products.

REFERENCES

[1] Zhao Lina, Wang Feng. Teaching of Cultural Creative Product Design Course from the Perspective of Curriculum Ideology and Politics [J]. Overseas Digest, 2022(7):0083-0085.

[2] Pan Yingli. Research on the Development of Cultural Creative Agriculture Industry in Xi'an from the Perspective of Internet+ [J]. Hunan Agricultural Machinery, 2018, 045(007):24-25.

[3] Zhou Jing. Exploring the Teaching Practice of "Cultural Creative Product Design" Course Ideology and Politics Based on Cultural Confidence in Higher Vocational Education [J]. Textile Report, 2023, 42(9):7-9. DOI:10.3969/j.issn.1005-6289.2023.09.006.

[4] Yan Muhan. Application Exploration of Ideological and Political Integration + Project Driven in the "Regional Cultural Creative Investigation and Design" Course [C]//Proceedings of the 2024 Forum on Ideological and Political Education, Zhengzhou Sub-Forum. 2024.

[5] Zhou Zhixin, Li Qin. Research on the Application of Project Teaching Method in the Construction of Curriculum Ideology and Politics in Vocational Technical Normal Universities: A Case Study of "Cultural Creative Product Design" Course [J].

Vocational Education Research, 2023(8):22-26. DOI:10.3969/j.issn.1672-5727.2023.08.005.
[6] Wang Yi, Peng Huarong. Design and Practice of Ideology and Politics in the "Cultural Creative Product Design" Course [J]. 2022.
[7] Guo Meini. Research on Perceived Value and Consumption Intention of Museum Cultural Creative Products [J]. Packaging Engineering, 2018, 39(16):223-227.
[8] Zhao Jing. Research on Teaching Design and Implementation of Cultural Creative Product Design Course from the Perspective of Curriculum Ideology and Politics [J]. Scientific Consultation, 2022(14):3.
[9] Tian Lu, Liu Yi. Research and Application of Cultural Creative Design Based on Campus Cultural Education: A Case Study of Hunan Bio-Medical and Electromechanical Vocational Technical College [J]. 2021(11):164-165. DOI:10.12228/j.issn.1005-5312.2021.11.082.
[10] Sun Rong. "Cultural Creativity + Ideology and Politics": Research on Innovative Education Model for Ideals and Beliefs of Art College Students [J]. Quarterly Journal of Small and Medium Enterprises Management and Technology, 2019. DOI: CNKI:SUN:ZXQY.0.2019-03-048.

Study on the Tourism Path of Traditional Chinese Medicine Health Preservation in Zibo City Based on the RMP Model

Pei Geng
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: This study investigates the tourism path of traditional Chinese medicine health preservation in Zibo City using the RMP model, aiming to reveal its potential in enhancing local tourism development. A comprehensive literature review on the RMP theory was conducted, synthesizing relevant domestic and international research to establish an application framework in health preservation tourism. A mixed-method approach was employed, incorporating questionnaires, expert interviews, and field investigations. The questionnaires targeted tourists, industry practitioners, and local government officials to gather diverse perspectives. Expert interviews involved scholars and professionals in traditional Chinese medicine and tourism to ensure depth and expertise. Field investigations provided practical data from existing health preservation tourism sites in Zibo. The findings suggest that the RMP model effectively enhances the attractiveness and sustainability of traditional Chinese medicine health tourism in Zibo City. It offers a systematic development path through resource integration, market positioning, and product innovation, including precise market segmentation, diverse cultural experience projects, and robust infrastructure development. The study highlights the critical role of government in policy support and resource allocation and recommends multi-party cooperation to promote high-quality development in traditional Chinese medicine health tourism. The conclusions provide a new theoretical basis and practical guidance for traditional Chinese medicine health tourism in Zibo and beyond.

Keywords: RMP model; Traditional Chinese medicine health tourism; Zibo City; Tourism Path; Resource Integration.

1. INTRODUCTION

1.1 Research Background and Significance

In recent years, as global aging accelerates, there has been a growing public concern for health. Health preservation tourism, which combines leisure and wellness, is increasingly popular. Traditional Chinese medicine (TCM) health tourism, leveraging its unique advantages in health maintenance, treatment, and wellness, has emerged as an important subfield. Zibo City, one of China's historical and cultural cities, boasts rich TCM resources and a long-standing cultural tradition. Developing TCM-themed health tourism can facilitate the transformation and upgrading of the local tourism industry while promoting the inheritance and development of TCM culture. In the context of the current economic restructuring, exploring the TCM health tourism path based on the RMP model, leveraging Zibo's local resources, holds significant theoretical and practical value.

1.2 Literature Review of Domestic and International Research

Current research on health tourism, both domestically and internationally, tends to focus on conceptual definitions, market characteristics, and development paths. Internationally, studies often center on medical tourism and health resorts, emphasizing precise market demand analysis and standardization of product services. However, TCM health tourism, with its rich cultural connotation and unique health philosophy, has received relatively less attention. Domestic research emphasizes resource evaluation and development strategies for TCM health tourism, primarily based on local practices, with a focus on resource integration and market cultivation. For instance, Fu Qianan (2020) discussed

TCM health tourism product development based on the RMP theory, highlighting that effective resource integration and market positioning can enhance product competitiveness. Nevertheless, existing studies lack systematic theoretical guidance and practical paths for TCM health tourism in specific cities.

1.3 Research Objectives and Questions

This study aims to construct a development path for TCM health tourism in Zibo City based on the RMP model. The primary research questions include: How to integrate Zibo's TCM resources using the RMP model? How to accurately position the market for TCM health tourism in Zibo? How to innovate TCM health tourism products in Zibo? Addressing these questions will provide significant theoretical support and practical recommendations for the development of TCM health tourism in Zibo and other regions.

2. THEORETICAL FOUNDATION

2.1 Overview of the RMP Model

The RMP model, which stands for Resources, Market, and Product, is a comprehensive theoretical framework for tourism development that integrates resource integration, market positioning, and product innovation. In tourism development, resources serve as the foundation, the market guides the direction, and the product is at the core. By utilizing the RMP model, researchers can systematically analyze the strengths and weaknesses of tourism resources, align with market demands for precise positioning, and design tourism products that meet these demands. The RMP model emphasizes the integrated use of resources, achieving product innovation and development through market segmentation and positioning, aiming for sustainable development and enhanced competitiveness of tourism products.

2.2 Theoretical Framework of TCM Health Tourism

TCM health tourism is a form of tourism based on TCM theories, incorporating functions such as health maintenance, disease prevention, and health promotion. This tourism form involves not only the dissemination of traditional TCM culture but also the innovative design and marketing of tourism products. The theoretical framework of TCM health tourism primarily encompasses three aspects: First, resource-wise, it relies on abundant TCM resources and cultural heritage, including medicinal herbs, TCM theories, and diagnostic techniques. Second, market-wise, it is essential to accurately understand consumer health maintenance needs, particularly in modern society, where health has become a new lifestyle, leading to growing market demand for TCM health tourism. Third, regarding products, it is vital to innovate products based on traditional TCM theories, developing competitive tourism offerings, such as TCM therapeutic projects and wellness experience activities.

3. RESEARCH METHODS

In the research design, a scientific and rigorous methodology is fundamental to ensuring the reliability and validity of the research results. This section will detail the methods for data collection and analysis, aiming to provide a solid foundation for subsequent discussions.

3.1 Data Collection Methods

Data collection is the initial step in research, determining its depth and breadth. To comprehensively understand the development status of TCM health tourism in Zibo City, this study employed various data collection methods, including literature review, questionnaire surveys, in-depth interviews, and field investigations.

In the literature review, the researcher examined numerous academic papers, government reports, and industry white papers related to TCM health tourism and the RMP model, extracting valuable information on theoretical frameworks and application examples. This established a theoretical foundation for the study and helped identify pressing issues.

The questionnaire survey is a crucial method for obtaining large-scale quantitative data. This study designed a detailed questionnaire targeting tourists, tourism practitioners, and local government officials in Zibo City. The questionnaire covered aspects such as awareness of TCM health tourism, evaluation of Zibo's tourism resources, and expectations for future development. A random sample yielded 500 valid responses, ensuring representativeness.

In-depth interviews aimed to gather more detailed and professional insights. The research invited several experts and scholars from the TCM and tourism fields to discuss the current state, challenges, and future opportunities of TCM health tourism. These interviews provided constructive suggestions and perspectives.

Field investigations served as an important supplement to data collection. The research team visited multiple TCM health tourism sites in Zibo City to observe resource utilization, visitor experiences, and infrastructure development. This firsthand observation provided direct data and helped validate findings from surveys and interviews.

3.2 Data Analysis Methods

Data analysis is the process of transforming raw data into meaningful information. This study employed various analytical techniques, including quantitative and qualitative analysis. In quantitative analysis, statistical software was used to process questionnaire data. Descriptive statistics summarized tourist awareness of TCM health tourism in Zibo, while cross-analysis explored preferences for tourism products among different demographic groups. Regression analysis was also applied to examine the key factors influencing visitor satisfaction, providing data support for further market positioning.

Qualitative analysis was primarily used to process data from interviews and field investigations. Content analysis extracted key viewpoints from expert interviews and examined the logical relationships behind these insights. Additionally, thematic analysis of field observation notes identified issues and challenges affecting the development of TCM health tourism in Zibo City.

By employing these comprehensive data collection and analysis methods, the study aims to gain a multidimensional understanding of the current status of TCM health tourism in Zibo, providing a solid basis for subsequent path design.

4. ANALYSIS OF THE CURRENT STATUS OF TCM HEALTH TOURISM IN ZIBO CITY

4.1 Overview of TCM Resources in Zibo City

Zibo City, located in central Shandong Province, boasts a favorable geographical position and rich historical and cultural heritage, providing a conducive environment for the flourishing of traditional Chinese medicine (TCM) resources. The city is endowed with abundant natural and cultural resources, particularly in medicinal herbs. According to statistics from Zibo's agricultural department, hundreds of medicinal plant species are distributed throughout the city, with notable varieties like Astragalus and Salvia miltiorrhiza gaining national recognition. Additionally, Zibo is home to several TCM institutions and research organizations, gathering numerous experts and scholars in the field, thus laying a solid foundation for the integration of TCM resources in health tourism.

Zibo's TCM resources extend beyond natural resources to include rich historical and cultural assets. The health maintenance philosophies inherent in Qilu culture significantly influence the local lifestyle, making it a distinctive feature of TCM health tourism in Zibo. By integrating these resources, diverse tourism products can be developed to attract visitors from across the country and around the world.

4.2 Current Market Status of Health Tourism in Zibo City

In recent years, Zibo City has witnessed a positive trend in the development of health tourism. Data from the Zibo Tourism Bureau indicates a steady increase in the number of visitors participating in TCM health projects, particularly among the middle-aged and older demographics. Changes in visitor demographics reflect the diversification of market demand, with an increasing number of tourists seeking wellness experiences through travel amidst growing health awareness.

However, Zibo's health tourism market faces several challenges. The issue of product homogeneity is prominent, with many offerings lacking innovation and unique characteristics, which diminishes market appeal. Furthermore, the infrastructure and service levels for TCM health tourism need improvement, particularly in areas such as information services and personalized visitor experiences, necessitating further investment and enhancements.

Market research indicates that while overall

visitor satisfaction with TCM health tourism in Zibo is relatively high, there remains room for improvement in specific service and experience aspects. This suggests that while Zibo's TCM health tourism possesses a certain foundational strength in resources and market potential, it requires product innovation and service optimization to enhance overall competitiveness.

5. PATH DESIGN BASED ON THE RMP MODEL

The development path for TCM health tourism in Zibo City leverages the RMP model, providing a systematic framework that focuses on resource integration, precise market positioning, and innovative product development. This approach aims to enhance the overall competitiveness of TCM health tourism in the region.

5.1 Resource Integration and Utilization

Zibo City has a wealth of TCM resources, including medicinal herb production areas, traditional TCM techniques, and related cultural heritage. The primary challenge is to transform these resources into tourism attractions. Effective resource integration requires scientific planning and strategic layout to create themed resource clusters.

For resource utilization, developing TCM cultural theme parks and distinctive TCM museums can enhance visibility and experiential opportunities. Additionally, modern technological methods, such as VR projects showcasing TCM culture, can immerse visitors in the charm of TCM in a virtual environment. These initiatives not only enhance tourism product appeal but also promote the inheritance and dissemination of TCM culture.

5.2 Market Positioning and Segmentation

Effective market positioning must account for the diverse needs of different demographics regarding TCM health tourism. According to surveys by the Zibo Tourism Bureau, key visitor groups include middle-aged and elderly tourists, individuals in sub-health states, and younger tourists interested in TCM culture. Specific targeting for these groups allows for the development of tailored tourism products that meet varied demands.

For instance, long-term wellness-themed tours can be designed for older visitors, including health lectures, wellness dining, and specialized therapeutic activities. Short-term recovery services can be offered to those in sub-health states, integrating TCM treatment with wellness retreats. For younger visitors, TCM cultural experience projects can enhance their interest and connection to traditional culture. This market segmentation strategy better addresses the needs of different consumer groups, improving Zibo's TCM health tourism market coverage and customer satisfaction.

5.3 Product Innovation and Development

Product innovation is crucial for enhancing tourism attractiveness and increasing value-added opportunities. The development of TCM health tourism products should not only leverage existing resources but also prioritize innovative design to boost visitor engagement and experience. A series of products that reflect Zibo's local characteristics could be developed, such as TCM therapy experience programs, medicinal cuisine workshops, and TCM wellness resorts.

Furthermore, utilizing modern technology can facilitate personalized services based on big data and IoT, allowing visitors to choose the most suitable wellness programs based on their health conditions. This technology-driven product innovation can enhance visitor satisfaction and significantly improve the brand value and market competitiveness of TCM health tourism in Zibo.

6. POLICY RECOMMENDATIONS

The role of government is critical in promoting the development of TCM health tourism in Zibo City. Therefore, providing actionable policy recommendations is essential for ensuring the successful implementation of the designed pathways.

6.1 Government Roles and Support Measures

The government serves primarily as a planner and facilitator in the development of TCM health tourism. It can introduce specific policies to support the sector, including financial assistance, tax incentives, and land use support. Additionally, the establishment of special funds can encourage innovation and research activities in TCM health tourism by relevant enterprises and institutions.

The government should also act as a

coordinator to integrate resources and promote the development of the TCM health tourism industry. By enhancing collaboration with various stakeholders, a collective effort can be made to advance infrastructure development and standardize services, thereby improving overall service quality.

6.2 Multi-Stakeholder Cooperation and Resource Sharing Mechanisms

To foster the growth of TCM health tourism, it is essential to establish mechanisms for multi-stakeholder cooperation and resource sharing. The government should actively create platforms that promote collaboration among tourism enterprises, medical institutions, research organizations, and educational entities. Resource sharing can leverage complementary advantages and elevate service levels and market competitiveness in TCM health tourism.

Moreover, establishing an industry association for TCM health tourism could help formulate industry standards and regulate market behavior. Regular industry exchange meetings and seminars can facilitate experience sharing and technical exchanges, driving the sustainable development of TCM health tourism.

7. CONCLUSION

The development of TCM health tourism in Zibo City, guided by the RMP model, offers a clear pathway for enhancing competitiveness and market influence through resource integration, market segmentation, and product innovation. With rich TCM resources and cultural heritage, Zibo is well-positioned to develop TCM health tourism. However, achieving this goal necessitates scientific planning and collaborative efforts. The government plays a pivotal role in this process, and through policy support and resource integration, it can effectively promote the growth of TCM health tourism.

Moving forward, continuous research on market demand, innovation in tourism products and services, and enhancement of visitor satisfaction should be prioritized. It is also crucial to emphasize the inheritance and promotion of TCM culture to enhance the brand value and international influence of Zibo's TCM health tourism. Through these efforts, Zibo's TCM health tourism can secure a competitive position in domestic and international markets, injecting new vitality into local economic development.

ACKNOWLEDGEMENTS

Zibo Social Science Planning Research Project, Project name: Research on TCM Recreation Tourism Path in Zibo City Based on RMP Model(23ZBSK092).

REFERENCES

[1] Fu Qiannan. Research on the Development of Traditional Chinese Medicine Health and Wellness Study Tour Products Based on RMP Theory [J]. Journal of Zhejiang Shuren University, 2020, 000(005):57-63.

[2] Cao Shanshan. Research on the Development of Traditional Chinese Medicine Health and Wellness Tourism Based on the Onpu Analysis Model: A Case Study of Wushan County [J]. Tourism Overview, 2023(22).

[3] Zeng You. Research on the Development of Rural Health and Wellness Tourism Products Based on the P-RMP Model: A Case Study of Bama, Guangxi [J]. Northern Economy and Trade, 2022(10):4.

[4] Lü Liyun. Research on the Development of Taoist Health and Wellness Tourism in Zhangshu Gezaoshan Scenic Area Based on RMP Analysis [J]. Contemporary Tourism, 2021(33):35-37.

[5] Yang Yanxuan, Fang Kemei, Wang Yue. Research on the Development of Ecological Health and Wellness Tourism in Zhangjiajie Based on the RMFEP Model [J]. Market Weekly, 2023, 36(11):72-76.

[6] Guo Eryan, He Jing, Qin Xinyu. Research on the Development of Forest Health and Wellness Tourism in Henan Province Based on RMP Analysis Method [J]. Business Exhibition Economy, 2022(23):3. DOI:10.19995/j.cnki.CN10-1617/F7.2022.23.030.

[7] Yang Jing, Hou Zhiyong, Hu Yaqi. Research on the High-Quality Development Path of the Health and Wellness Tourism Industry in Chengdu Based on RMP Analysis Method [J]. Journal of Sichuan Tourism University, 2024(4):70-75.

[8] Zhang Han. Research on the Development of Rural Health and Wellness Tourism in Puzhehei, Yunnan Based on RMP Theory [J].

Tourism Overview, 2024(4).
[9] Lü Shuxian, Dong Shouye, Qi Tingyue. Exploration of Health and Wellness Tourism Development Strategies Based on RMP Model: A Case Study of Qinghe Town, Ji'an [J]. Guangdong Sericulture, 2024, 58(4):145-147.

Constructing a Higher Education Teaching Culture Framework in the "Internet Plus" Era

ZhiQiang Jiang
Chongqing Jiaotong University, Chongqing, 400074, China

Abstract: In the "Internet Plus" era, the construction of higher education teaching culture systems faces new opportunities and challenges. This study investigates how to develop a teaching culture framework in universities that meets the demands of rapidly advancing internet technologies. Utilizing literature reviews, case studies, and empirical surveys, the research systematically examines the impact of the internet on educational culture and universities' practical experiences in cultural transformation. Key issues identified include insufficient integration of traditional teaching concepts with internet technologies, and the need for enhanced information literacy among educators. Surveys and interviews with frontline teachers and educational managers provided primary data on building educational culture systems. The findings suggest that developing a suitable teaching culture framework requires: enhancing teachers' IT skills through ongoing training and practice; emphasizing the integration of internet technology with teaching content to drive instructional innovation; and fostering an open, shared educational culture that encourages collaboration and communication among educators. The results offer theoretical and practical guidance for innovating teacher education culture systems in the "Internet Plus" context.

Keywords: Internet Plus; higher education faculty; educational culture system; information literacy; teaching innovation

1. INTRODUCTION

1.1 Research Background

With rapid advancements in information technology, the "Internet Plus" era has emerged, representing a significant shift in societal norms. This transition brings unprecedented changes in higher education, particularly in constructing educational culture systems for faculty. As central figures in education, teachers' pedagogical beliefs, methods, and professional competencies directly influence students' learning outcomes and institutional educational quality. The widespread adoption of internet technologies necessitates adjustments and innovations in the educational culture frameworks for university faculty to align with contemporary educational demands.

1.2 RESEARCH OBJECTIVES AND SIGNIFICANCE

This study aims to explore the construction of university teaching culture systems that align with the characteristics of the "Internet Plus" era. The significance lies in providing theoretical insights and practical strategies for faculty, facilitating pedagogical transformation, teaching innovation, and quality enhancement. Additionally, the study offers policy recommendations to aid in the optimization and development of educational policies.

1.3 REVIEW OF DOMESTIC AND INTERNATIONAL RESEARCH

Internationally, research on integrating internet technology with educational culture is well-established. Western universities have explored deep integration of IT within education, utilizing online platforms for teaching management and resource sharing, alongside data analytics to optimize educational decision-making. Domestically, the educational sector recognizes the potential role of the internet in enhancing educational culture systems. Yu Yue (2015) noted the participatory culture fostered by the internet, prevalent in student education but underexplored in teacher education. Research on university teaching culture in China emphasizes moral development (Di Yanru, 2018), though specific strategies within the internet era remain fragmented. This study seeks to bridge these gaps through theoretical

and empirical exploration.

2. THEORETICAL FOUNDATION

2.1 Characteristics and Impact of the "Internet Plus" Era

The "Internet Plus" era signifies not just a technological upgrade but a profound transformation in social operations. Rapid IT development has altered learning, work, and life, enabling easier information access, frequent interactions, and efficient resource sharing. In education, internet technology drives digitalization of resources, diversification of teaching methods, and flexible learning models. Universities, as hubs of knowledge innovation, face the challenge of integrating these technologies within their educational culture systems, with "Internet Plus" acting as a catalyst for cultural change.

2.2 Overview of Educational Culture Systems

An educational culture system encompasses the beliefs, systems, norms, content, and presentations centered around education within a societal context. It includes not only teaching content and methods but also educators' philosophies, ethical standards, and the dynamics of teacher-student interactions. A robust educational culture system should foster students' holistic and innovative abilities, support teachers' professional and ethical development, and promote sustainable educational advancement.

2.3 Components of University Faculty Educational Culture Systems

Key elements in constructing university faculty educational culture systems include: educational philosophy, which guides teachers' actions and determines educational direction and quality; teaching methods, which should incorporate contemporary techniques like blended learning and flipped classrooms to enhance efficacy; information literacy, essential for effectively leveraging IT resources in teaching; professional development and ethical standards, crucial for shaping positive educator role models; and an educational environment that supports collaboration and resource sharing among faculty.

3. RESEARCH METHODS

This study employs a multi-method approach to ensure scientific rigor and accuracy, aligning methods with research objectives and problem characteristics.

3.1 Literature Review

The literature review method systematically examines existing research to identify current trends and gaps. By analyzing domestic and international literature, insights into the construction of university teaching culture systems in the "Internet Plus" era are gained. The review establishes the theoretical framework and guides research design, drawing from journals, conference papers, and dissertations to provide comprehensive background knowledge.

3.2 Case Study Method

Case studies analyze practices in representative universities, offering empirical support. By selecting exemplary institutions, successful factors and challenges in constructing teacher education culture systems within an "Internet Plus" context are identified. Interviews with administrators, teachers, and students, alongside policy document analyses, reveal detailed measures and outcomes of educational culture initiatives.

3.3 Empirical Survey Method

Empirical surveys, combining quantitative and qualitative data collection, facilitate in-depth problem analysis. Surveys and interviews gather insights from frontline teachers and educational managers on internet technology usage, cultural understanding, and teaching challenges. Quantitative data are analyzed with statistical software, while qualitative data undergo coding and thematic analysis. These data underpin a comprehensive understanding of current faculty educational culture systems, informing subsequent strategy development.

4. ANALYSIS OF CURRENT UNIVERSITY FACULTY EDUCATIONAL CULTURE SYSTEMS

4.1 Main Characteristics

Currently, university faculty educational culture is characterized by informatization, globalization, and diversification. In terms of informatization, teachers are increasingly utilizing multimedia technologies and online resources, with e-textbooks, online courses, and learning management systems becoming integral to teaching. Globalization has led to

more frequent international exchanges, with faculty engaging in global collaborations and academic activities to broaden perspectives and update educational philosophies. Diversification reflects varied educational goals, leading to enriched teaching methods and content focused on addressing students' individual needs and development.

4.2 Existing Problems and Challenges

Despite improvements in teaching quality through IT application, challenges remain. Firstly, there is a disparity in teachers' information literacy levels, with some having low acceptance of new technologies, hindering technological innovation in education. Traditional mindsets and institutional constraints often limit educational culture innovation, with many educators relying on conventional methods. Additionally, imbalances in educational resources persist, posing significant challenges for resource acquisition and application, thus restricting educational culture development.

4.3 Influencing Factors

Several factors influence the construction of university faculty educational culture systems. Policy directives significantly guide cultural development, with national and local government policies, funding, and technology investments impacting university decisions and innovations. Teacher personal attributes, including professional abilities, IT literacy, and educational philosophies, are crucial. Teachers' attitudes towards technology and their application capabilities are key drivers of cultural development. Furthermore, university management models, resource allocation, and innovation emphasis greatly determine the effectiveness of cultural system construction.

5. STRATEGIES FOR CONSTRUCTING EDUCATIONAL CULTURE SYSTEMS IN THE INTERNET PLUS ERA

5.1 Enhancing Teachers' Information Literacy

Improving teachers' information literacy requires multiple approaches. Teacher training is vital; universities should regularly offer IT application workshops to help teachers master the latest technologies and tools. Training should emphasize information literacy, including data acquisition, analysis, and application skills. Establishing teacher learning communities, both online and offline, can facilitate experience sharing and resource exchange. Additionally, reflective practices in teaching can help teachers enhance their information literacy.

5.2 Integrating Internet Technology with Teaching Content

Integrating technology with teaching content is crucial in the Internet Plus era. Course design should incorporate IT applications to create interactive and diverse resources. Teachers can use digital libraries and virtual reality to enrich content and enhance learning experiences. Innovative teaching methods, such as blended learning and flipped classrooms, supported by technology, encourage active learning and engagement. Teachers should adapt these methods based on course content and student needs.

5.3 Building an Open and Shared Educational Culture Environment

An open and shared educational culture fosters professional development and quality improvement. Universities should encourage the creation of resource-sharing platforms, enabling access to courses, teaching outcomes, and experiences. Open course platforms facilitate the sharing of quality resources and enable cross-institutional and international academic collaboration. Educational leaders should support open campus culture initiatives, backing teacher innovation and practice. Cross-disciplinary collaboration mechanisms can further enhance research and teaching innovation, injecting new vitality into educational culture development.

6. CASE STUDY

Case studies are crucial in researching educational culture systems in the Internet Plus era, extracting universally applicable methods and strategies from exemplary universities.

6.1 Practical Experiences of Leading Universities

Some universities lead in constructing educational culture systems, gaining rich experiences. For example, a prominent Beijing university has successfully integrated internet technology with educational culture through years of exploration. The university has developed a digital campus, enabling

teachers to integrate and share resources seamlessly. Combined online and offline teaching ensures students have access to diverse resources.

The university emphasizes enhancing teachers' information literacy by organizing regular IT workshops and seminars, aiding teachers in updating knowledge structures and improving technical skills. Teaching innovation awards motivate teachers to explore and implement new teaching models, promoting successful cases school-wide.

Furthermore, the university's open educational culture platform breaks down disciplinary barriers, fostering cross-disciplinary collaboration and interaction. This approach not only raises teachers' research and teaching standards but also significantly boosts students' engagement and creativity.

6.2 Insights and Lessons from Successful Cases

Key lessons from these cases include recognizing IT's deep application as crucial for transforming educational culture systems. Schools must select appropriate technology paths and strategies based on their conditions and strengths. Teachers should adapt to and utilize these technologies to enhance teaching effectiveness.

Teacher information literacy development is essential; universities should offer continuous growth opportunities, encouraging proactive IT applications to enhance teaching innovation. Teachers must not only learn tool usage but also develop critical thinking and problem-solving skills for flexible application.

Building open educational environments aids academic exchange and resource sharing, improving educational quality and expanding teachers' professional development opportunities. Through open platforms, teachers can engage in cross-disciplinary and international collaboration, fostering diverse teaching and research innovation.

7. CONCLUSION

The Internet Plus era presents unprecedented opportunities for transforming university faculty educational culture systems. Analyzing successful practices highlights key factors: IT application, teacher information literacy enhancement, and open educational environments. Universities should prioritize deep IT integration, professional development, and innovation. Government and societal support are crucial for providing policy backing and resources to advance educational culture systems.

Future research could explore differing needs in educational culture system construction across university types, proposing targeted strategies. Investigating IT's long-term impact on educational culture transformation can offer further theoretical and practical guidance for policymakers and educators.

REFERENCES

[1] Yu Yue. Exploration of College Students' Media Literacy Education in a Participatory Culture [J]. School Party Building and Ideological Education: Lower Edition, 2015.

[2] Di Yanru. Research on the Construction of Teacher Ethics in Colleges and Universities in the New Era [J]. Journal of Ideological and Theoretical Education, 2018(4):5. DOI: CNKI:SUN:GXSJ.0.2018-04-024.

[3] Peng Hao. Research on the Cultural Environment of Ideological and Political Education in Colleges and Universities in the "Internet+" Era [J]. Miscellaneous Monthly: Academic Edition, 2016(5):1.

[4] Yan Chunxia. Integration of Excellent Traditional Culture into Ideological and Political Education in Colleges and Universities in the Internet+ Era [J]. Shanhaijing: Educational Frontier, 2021(19):0066-0067.

[5] Kong Fanli. Constructing a Quality Culture Management System in Colleges and Universities [J]. Heilongjiang Higher Education Research, 2008.

[6] Huang Shunyang. Research on the Construction Path of a Clean Culture System in Colleges and Universities in the Context of Digital Intelligence [J]. 2024.

[7] Xian Chunni, Wu Yanduan. Research on Ideological and Political Education in Colleges and Universities Based on the Internet Background [C]//Research Achievements in the Development of Teachers' Teaching Ability (Volume Ten). 2017.

[8] Du Xiaohong; Chen Yongfa; Li Bingqion; Han Jinming. Analysis of the Implementation Status and Difficulties of the Compulsory Wushu Course in University Physical

Education Majors [J]. Journal of Beijing Sport University, 2018(3).
[9] Li Xianling, Han Xu. Construction of a "One-Stop" Student Community Cultural Education System in Normal Universities: Value, Dilemmas, and Strategies [J]. Teacher Education Forum, 2024.
[10] Wang Gongyan, Ma Qinan. The Educational Value of Traditional Chinese Medicine Culture and Its Implementation Path in Colleges and Universities [J]. Journal of Liaoning Institute of Science and Technology, 2024, 26(1):56-60. DOI:10.3969/j.issn.1008-3723.2024.01.015.
[11] Zhang Lili. Research on the Integration Path of Red Culture into College Students' Ideological and Political Education: A Case Study of Jining Medical University [J]. 2024(5):98-100.

Exploring Multiple Perspectives on Teaching Methods in College Physical Education

Hongfang Li, Peng Wang
Taishan University, College of Physical Education, Shandong, Taian, 271000, China

Abstract: This study aims to explore multiple perspectives on teaching methods in college physical education, with the goal of enhancing teaching effectiveness and promoting the holistic development of students. In the context of global educational reforms and diverse teaching demands, traditional physical education teaching methods no longer fully meet the personalized and diversified needs of students. This study employs various research methods, including literature review, field research, and case analysis, to construct a multi-perspective teaching framework. Firstly, through a literature review of the current status of physical education teaching in domestic and international universities, the key problems and challenges in teaching methods are identified. Then, feedback from students and teachers is collected through questionnaires and interviews to analyze the applicability and effectiveness of different teaching methods. During the research process, the effects and student responses to the multi-perspective teaching approach in practical applications, especially in integrating internet technology, modular teaching, and scenario-based interactions to enhance student engagement and learning effectiveness, are observed through teaching piloting in certain universities. The research findings indicate that the multi-perspective teaching approach can effectively enhance student motivation and engagement, and promote comprehensive improvements in their physical and psychological qualities. Additionally, the integrated teaching methods can better accommodate students from different backgrounds, enhancing the personalization and targeting of teaching. The research conclusions provide new ideas and practical guidance for the reform of college physical education teaching, contributing to educational innovation and the improvement of teaching quality.

Keywords: College Physical Education; Multiple Perspectives; Teaching Methods; Teaching Reform; Personalized Learning

1. INTRODUCTION

1.1 Research Background and Significance

College physical education, as an important part of higher education, not only provides basic sports skill training but also promotes the comprehensive development of students, including physical and psychological qualities. With the increasing emphasis on health and holistic education in society, the importance of college physical education teaching has become more prominent. However, traditional teaching methods in physical education often focus on skill instruction and physical training, failing to fully stimulate students' interest and initiative. The rapid changes in modern society and the diversified development of educational models require us to reexamine the teaching methods in physical education and explore more effective approaches.

In this context, the emergence of multi-perspective teaching methods becomes relevant. It emphasizes starting from multiple dimensions and levels, considering factors such as individual differences among students, teaching contexts, and educational technologies, with the aim of optimizing teaching effectiveness. This approach has been proven effective in enhancing learning outcomes and student satisfaction in other disciplines. Introducing multi-perspective teaching methods in physical education has the potential to break through the limitations of traditional teaching and enable students to achieve more comprehensive development in physical activities.

1.2 Review of Domestic and International Research

In recent years, research on teaching methods in physical education has been increasing. Foreign studies have mainly focused on

exploring interdisciplinary teaching methods integrated with sports, emphasizing student-centered instructional design. Some universities in the United States have introduced inquiry-based learning and project-based learning in physical education courses, which have improved student engagement and learning outcomes. European universities are more focused on integrating physical education with health education, enhancing students' health awareness and sports skills through modular teaching.

In contrast, domestic research has paid more attention to the problems in traditional physical education teaching and how to optimize the teaching process using modern educational technologies. Some universities have started to integrate internet technology with physical education teaching, such as improving student interest through online courses and virtual reality technology. However, overall, there is still a lack of systematic research and exploration of the application of multi-perspective teaching methods in domestic physical education, and there is a lack of systematic research on the integration of various teaching methods. This provides an important opportunity for this study.

2. THEORETICAL FOUNDATION

2.1 Overview of Multi-Perspective Teaching Methods

Multi-perspective teaching methods are instructional strategies developed based on theories from disciplines such as education, psychology, and information technology. This approach emphasizes analyzing and addressing teaching problems comprehensively from multiple perspectives. In physical education, the application of multi-perspective teaching methods goes beyond diversified course design and also includes optimizing the teaching environment, addressing individual differences among students, and utilizing modern technology.

The core of multi-perspective teaching methods lies in flexibility and inclusiveness. By flexibly adjusting the content and format of teaching, teachers can better adapt to students' learning needs and stimulate their learning motivation. This approach emphasizes active student participation and self-exploration, advocating for methods such as scenario-based interactions and project collaboration to help students improve skills and qualities in a pleasant learning atmosphere. In contrast to traditional single teaching methods, multi-perspective teaching methods emphasize process-oriented learning and experiential teaching, highlighting the students' self-construction process under the guidance of teachers.

2.2 The Theoretical Framework of College Physical Education Teaching

The theoretical framework of college physical education teaching mainly includes several fundamental aspects: curriculum design, teaching implementation, and learning assessment. In curriculum design, attention should be given to the scientific and interesting nature of the course content, and personalized adjustments should be made based on students' interests and abilities. During teaching implementation, teachers are not only knowledge providers but also guides and supporters of learning. Modern educational technology should be fully utilized to broaden the teaching perspectives and enrich teaching methods.

In terms of learning assessment, a combination of process-oriented evaluation and outcome-oriented evaluation should be emphasized, focusing on students' development in physical skills, health awareness, and teamwork abilities. Additionally, college physical education teaching should incorporate the cultivation of social responsibility, enhancing students' team awareness and social adaptability through sports activities.

3. RESEARCH METHODS

3.1 Literature Review and Analysis

The first step in the research methods is to conduct an in-depth review and analysis of existing relevant literature to grasp the current research status and development trends of teaching methods in college physical education. By systematically searching academic journals, conference papers, and educational reports at home and abroad, relevant theoretical foundations, application status, and specific practical cases of multi-perspective teaching methods in physical education are collected and organized. Focus

is placed on the implementation effects, advantages, and limitations of different teaching methods. The application experience of multi-perspective teaching methods in other disciplines is also included in the analysis to find strategies that can be applied.

By comparing and analyzing the research results of domestic and foreign scholars in this field, the adaptability and effectiveness of multi-perspective teaching methods under different cultural backgrounds and educational systems are revealed. It is found that foreign universities have started exploring interdisciplinary and multimodal teaching methods earlier, while domestic research on multi-perspective teaching methods is still at an early stage, with applications mostly concentrated in individual pilot universities. The results of the literature review provide a theoretical basis for the subsequent research design.

3.2 Questionnaire Design

To understand the real opinions and needs of students and teachers regarding current teaching methods in physical education, a questionnaire covering multiple dimensions is designed. The questionnaire includes satisfaction with existing teaching methods, students' learning experiences in physical education classes, challenges faced by teachers in teaching, and their awareness and acceptance of multi-perspective teaching methods. By using random sampling, students from different grades and majors, as well as physical education teachers with certain teaching experience, are selected to ensure sample diversity and representativeness.

The questionnaire design follows the principles of scientific rigor, using Likert scales to rate different teaching factors and combining open-ended questions to obtain both quantitative and qualitative data. Data analysis is conducted using SPSS software, employing descriptive statistics, correlation analysis, and other methods to reveal the potential needs and acceptance levels of students and teachers regarding multi-perspective teaching methods.

3.3 Interviews and Case Analysis

Based on the questionnaire survey, representatives of students and teachers are selected for in-depth interviews to uncover their deep-seated perspectives and expectations regarding physical education teaching. The interviews are conducted in a semi-structured format, focusing on the practicality, potential barriers, and improvement suggestions of multi-perspective teaching methods in actual teaching. By summarizing and analyzing the interview content, the shortcomings of the questionnaire survey are supplemented, and a comprehensive understanding of the teaching situation is achieved.

In addition, representative universities from domestic and international contexts are selected as case studies to examine their successful experiences and innovative practices in the application of multi-perspective teaching methods. The case analysis, combined with the results of the interviews, not only provides specific implementation paths but also reveals the adaptability of multi-perspective teaching methods in different cultural backgrounds. The case analysis in the research provides practical references and theoretical support.

4. ANALYSIS OF THE CURRENT STATUS OF COLLEGE PHYSICAL EDUCATION TEACHING

4.1 Limitations of Traditional Physical Education Teaching Models

In traditional physical education teaching, teachers often focus on lecturing, while students passively receive knowledge, lacking the motivation for autonomous learning. This one-way teaching method often overlooks individual differences among students and fails to fully stimulate their enthusiasm and creativity. Research shows that traditional physical education teaching tends to focus on physical training and skill mastery, neglecting the important role of physical education in the development of psychological, social, and innovative abilities.

Furthermore, traditional teaching is often constrained by fixed teaching environments and schedules, resulting in a lack of flexibility and diversity in course content. With the development of technology and changing student needs, this highly structured teaching method no longer meets the requirements of modern education and calls for reform and innovation.

4.2 Feedback from Students and Teachers

on Existing Teaching Methods

Feedback from the questionnaire survey and interviews revealed that students expect physical education classes to provide more interactive opportunities and engaging activities. Some students expressed that current teaching methods are monotonous and lack attractiveness and personalized guidance. Teacher feedback revealed challenges encountered in implementing diversified teaching methods, including large class sizes, limited resources, and heavy teaching workload.

Teachers generally expressed interest in multi-perspective teaching methods, believing that they can enhance teaching flexibility and student engagement. However, they also expressed concerns about the complexity of implementation and the high requirements for teaching resources. These feedbacks provide direct basis and guidance for constructing multi-perspective teaching methods.

5. CONSTRUCTION OF MULTI-PERSPECTIVE TEACHING METHODS

5.1 Modular Teaching Strategy

The modular teaching strategy serves as the foundation for multi-perspective teaching methods. By dividing physical education courses into independent but interrelated modules, it enhances the flexibility of the curriculum and allows students to have autonomy in selecting their learning paths. Each module revolves around specific themes or skills, and students can choose and combine learning paths based on their interests and abilities.

Modular teaching not only enhances the structure of the curriculum but also supports personalized learning and differentiated instruction. Through data analysis and interviews, it was found that this approach can effectively adapt to large class teaching environments and meet the learning needs of students at different levels. Additionally, modular teaching provides teachers with clear teaching objectives and organizational frameworks, facilitating management and assessment.

5.2 Scenario-based Interactive Teaching

Scenario-based interactive teaching emphasizes enhancing student engagement and learning experiences through role-playing and scenario-based activities in real or simulated teaching contexts. This method not only promotes the practical application of physical skills but also enhances students' cooperation and problem-solving abilities.

Research has shown that scenario-based interaction can stimulate students' intrinsic motivation, enabling them to learn in a relaxed and enjoyable atmosphere. Through scenario settings, teachers can create various teaching scenarios for students to experience the diversity and enjoyment of physical activities in different contexts.

5.3 Application of Internet Technologies in Physical Education Teaching

The use of internet technologies can overcome the limitations of time and space, providing abundant resources and innovative teaching methods for physical education. The application of online courses, virtual reality, and augmented reality technology expands the breadth and depth of physical education teaching. Students can engage in course preview and review through online platforms, independently arrange their learning time, and improve learning efficiency.

Research indicates that the application of internet technologies in physical education teaching not only enhances the interactivity and interest of the courses but also provides new possibilities for teachers' instructional designs. In the context of the pandemic, online physical education teaching has become a necessary supplementary means, further validating the significant role of internet technologies in modern teaching.

6. EXPERIMENTATION AND APPLICATION

6.1 Implementation of Teaching Pilot Programs

To verify the applicability of multi-perspective teaching methods in college physical education, teaching pilot projects were designed and implemented. A university with abundant teaching resources and high research levels was selected as the pilot institution. The pilot courses included various types of sports such as track and field, basketball, and yoga to reflect the application effects of multi-perspective teaching methods in diverse courses.

The pilot courses were divided into three

stages: initial preparation, mid-term implementation, and post-feedback. In the initial preparation stage, emphasis was placed on teacher training and course design to ensure that teachers understood and mastered the core principles of multi-perspective teaching methods. Simultaneously, teaching modules and scenario-based interactive activities tailored to different course needs were developed, supported by internet technologies for dynamic course adjustments.

In the mid-term implementation stage, teachers applied multi-perspective teaching methods in the classroom, combining modular teaching strategies and scenario-based interactions to encourage students' participation in various forms of physical activities. Through the use of online platforms and virtual reality technologies, students could independently select and arrange their learning content, while teachers adjusted their teaching plans based on student feedback.

In the post-feedback stage, student and teacher opinions and suggestions were collected to provide references for subsequent improvements. Through questionnaire surveys and group interviews, problems and challenges encountered during the teaching pilot process were deeply explored. After data organization and analysis, a preliminary evaluation report on the implementation effects of multi-perspective teaching methods was generated.

6.2 Evaluation of the Effects of Multi-perspective Teaching Methods

To objectively evaluate the teaching effects of multi-perspective teaching methods, various quantitative and qualitative methods were used for analysis. Comparing the performance of pilot classes and traditional teaching classes in terms of students' physical skills, learning attitudes, and teamwork abilities revealed the actual impact of multi-perspective teaching methods.

Statistical analysis of student performance data using SPSS software showed that students in the pilot classes demonstrated significant improvements in skill mastery and learning attitudes. Specifically, the average scores of students in physical skill tests increased by 15%, and their satisfaction ratings with the course increased by 20%. Additionally, scenario-based interactive activities significantly enhanced students' teamwork abilities and communication skills.

The interview results further supported the findings of the quantitative data. Teachers generally believed that multi-perspective teaching methods significantly improved student engagement and autonomy in learning. Student feedback also indicated their positive attitudes towards this novel teaching approach, as it not only enriched their learning content but also sparked their interest in physical education.

7. RESULTS AND DISCUSSION

7.1 Impacts of Multi-perspective Teaching on Student Development

The application of multi-perspective teaching methods in college physical education not only enhances students' physical skills but also promotes the comprehensive development of their psychological and social abilities. Through modular course design, students can independently select learning modules based on their interests and developmental needs, enjoying personalized learning experiences. The empowerment of autonomy enhances students' participation and sense of achievement in physical education learning.

Scenario-based interactive teaching activities provide students with real practice environments and cultivate their abilities to cope with pressure and challenges. Through role-playing in simulated competitions and team activities, students learn how to communicate and collaborate with teammates, enhancing their interpersonal skills. Such activities contribute not only to the improvement of students' psychological qualities but also lay the foundation for their future social role transformation.

7.2 Analysis of Teaching Effects and Student Satisfaction

Through the evaluation of the pilot projects, it was found that multi-perspective teaching methods significantly increased students' satisfaction with physical education courses. Students no longer perceive physical education as monotonous physical training but as an opportunity for self-exploration and self-improvement. The increase in student satisfaction reflects their positive attitudes towards multi-perspective teaching methods and further validates the effectiveness of this

teaching model.

Teacher feedback also indicated that multi-perspective teaching methods provide them with broader innovative spaces and more teaching methods. Although there were certain challenges in the initial implementation, such as increased preparation time and high requirements for technical equipment, teachers generally believed that the investments were worthwhile. The positive feedback and significant progress of students provide confidence for the widespread application of multi-perspective teaching methods.

8. CONCLUSION

This study has explored the multi-perspective approach to college physical education teaching and has validated its scientific and practical nature. Through a combination of theory and practice, the pilot projects successfully demonstrated the potential of multi-perspective teaching methods in enhancing teaching effectiveness and student satisfaction. The research not only provides empirical support for the reform of college physical education teaching but also offers inspirations for educational innovation in other disciplines.

With its flexible curriculum design, rich scenario-based interactions, and integration of modern technologies, multi-perspective teaching methods have injected new vitality into college physical education teaching. Future research can further explore the applicability of multi-perspective teaching methods in other disciplines and investigate their implementation effects in different cultural contexts. Through ongoing optimization and implementation, multi-perspective teaching methods are expected to be widely applied, contributing to the enhancement of overall educational quality.

REFERENCES

[1] Zhou, W., & Wu, L. (2011). The Necessity and Implementation Approach of Multi-Perspective Interpretation of the Harmonious Classroom in College Physical Education. Journal of Chifeng University, 5. (in Chinese)

[2] Zhou, W. (2021). Exploring the Teaching Mode of Ideological and Political Education in College English Reading and Writing Courses from a Multimodal Perspective. Overseas English, 000(022), 29-31. (in Chinese)

[3] Liang, H. (2017). Research on College Physical Education Teaching and Reform from the Perspective of "Internet+". Youth Sports, 9. (in Chinese)

[4] Liu, N. (2009). The Necessity and Implementation Approach of Multi-Perspective Interpretation of the Harmonious Classroom in College Physical Education. Journal of Shanxi Normal University (Social Science Edition). (in Chinese)

[5] Wang, H. (2018). Research on the Teaching Method of Multimodal Stereoscopic Teaching Based on the Perspective of Flipped Classroom—Taking the Course of Sports Anatomy as an Example. Sports Science and Technology Literature Bulletin, 026(012), 39-41. (in Chinese)

[6] Dai, C. (2020). Analysis of the Multimodal Nature of Physical Education Games in Primary and Secondary School Physical Education Teaching. Contemporary Sports, 2020(23), 0155. (in Chinese)

[7] Ni, X. (2024). Analysis of Multimodal Micro-Teaching Based on ELAN—A Case Study of Hainan Normal University. Educational Progress, 14(10), 5. (in Chinese)

[8] Zheng, Y. (2016). Analysis of the Setting of Physical Education Games in Primary School Physical Education Teaching from a Multi-Perspective. Contemporary Sports Technology, 6(4), 2. (in Chinese)

[9] Xu, H. (2013). Reflection on the Reform of Teaching Ideas in the Course of School Physical Education. Journal of Hulun Buir College, 21(4), 4. (in Chinese)

[10] Li, R., Wang, L., & Qin, H. (2023). Analysis of the Integration of Ideological and Political Education into the Overall Development of Disciplines Based on Co-Word Analysis—Taking the Perspective of Sports Science. Education Exploration, 2023(8), 67-71. (in Chinese)

[11] Liu, Y., & Wang, H. (2024). Exploring the Teaching Practice of Traditional Chinese Medicine from a "Multidimensional Perspective"—A Case Study of Dispelling Wind-Cold Drugs. Chinese Medicine Education, 43(4), 108-112. (in Chinese)

[12] Huang, S., Wang, R., & Zhang, C. (2024). Application of ESP Teaching Model in the

Reform of Super-Disciplinary English Teaching from a Multidimensional Perspective. University Education, 2024(5), 175-179. (in Chinese)
[13] Zhu, F., & Shuai, C. (2024). Strategies for Promoting the Professional Growth of Physical Education Teachers from the Perspective of Integration of "Learning, Training, Competition, and Evaluation". Physical Education Teaching, 2024. (in Chinese)

Research on Digital Marketing Model Innovation for Human Settlement Projects in the Context of Internet Plus

Yanhong LI
Sichuan Post and Telecommunication College, Chendu, Sichuan 610067, China

Abstract: In the era of Internet Plus, the continuous development of digital technology provides new opportunities and challenges for the innovation of marketing models for human settlement projects. This study aims to explore how to enhance the sustainable development and competitiveness of human settlement projects through innovative digital marketing models. Firstly, this paper analyzes the core concepts and characteristics of digital marketing in the context of Internet Plus at a theoretical level, and identifies the limitations of existing marketing models for human settlement projects. Based on this, the study combines literature analysis and theoretical construction to conduct an in-depth analysis of the key elements of digital marketing models, and proposes a digital marketing strategy framework that meets the demands of the new era. Through a comprehensive examination of digital tools such as online communication, social media interaction, virtual reality applications, and big data analysis, the study reveals their potential advantages in enhancing user experience, improving brand awareness, and promoting project promotion. Moreover, this paper discusses the ethical issues and policy challenges that may arise during the process of digital transformation. The research results indicate that the innovation of digital marketing models can not only effectively enhance the market influence and user satisfaction of human settlement projects, but also promote their long-term sustainable development. Finally, this paper provides theoretical suggestions and directions for future innovation of digital marketing models, serving as a reference and inspiration for scholars and practitioners in related fields.

Keywords: Internet Plus; digital marketing; human settlement; sustainable development; innovation strategy

1. INTRODUCTION

1.1 Research Background and Significance

In the contemporary society, where digitization and informatization are accelerating, the widespread use and application of Internet technology have become the driving force for transformation and innovation in various industries. Particularly in the context of "Internet Plus," various traditional industries have encountered new development opportunities. As an important field related to social livelihood, human settlement projects also face an urgent need for digital transformation. Human settlement projects, which involve urban planning, ecological conservation, and residents' quality of life, directly impact social and economic sustainability. Therefore, under the promotion of "Internet Plus," exploring innovative digital marketing models for human settlement projects is not only of theoretical significance but also holds profound practical value. Innovative digital marketing models can leverage Internet technology to break the limitations of traditional marketing in terms of space and time, achieve more efficient resource allocation and information dissemination, and enhance the market competitiveness of projects.

1.2 Review of Domestic and International Research

Research on "Internet Plus" and digital marketing has received extensive attention both domestically and internationally. Internationally, digital marketing has become a mature research field, with scholars discussing it from various dimensions such as technological applications, user behavior analysis, and market strategies. International

research generally believes that digital technology not only innovates marketing tools but also profoundly transforms business models and user interactive experiences. Domestically, research has focused more on the practical application of "Internet Plus" in various industries, especially in real estate and urban planning, where there is a growing number of digital marketing case studies. However, systematic research on human settlement projects is still relatively scarce, with existing studies mostly being conceptual discussions lacking specific theoretical frameworks and empirical support. This academic situation indicates the need for more in-depth theoretical research in the future to fill the knowledge gap in this field.

1.3 Research Questions and Objectives

This study aims to answer the following core questions: Firstly, in the context of "Internet Plus," how does the digital marketing model impact the development of human settlement projects? Secondly, what are the key features and elements of these innovative digital marketing models? Lastly, how can potential ethical and policy challenges be identified and addressed during the process of digital transformation? Through exploring these questions, the objective of this research is to construct a theoretical framework to guide the innovative practice of digital marketing in human settlement projects.

2. THEORETICAL FOUNDATION

2.1 Concept and Development of "Internet Plus"

"Internet Plus" refers to the deep integration of Internet innovative achievements into various economic and social fields, enhancing the innovation and productivity of the real economy and transforming the development mode of the economy. As a new development model, "Internet Plus" emphasizes the extensive application of information technology, promoting the digital transformation of traditional industries. Its development goes through three stages: technological accumulation, deepening application, and pattern innovation. With the widespread application of 5G technology, the Internet of Things, big data, and cloud computing, the integration of the Internet and traditional industries has become even closer. In this context, the digital marketing innovation of human settlement projects requires not only technological support but also a comprehensive upgrade of management concepts and operational models.

2.2 Core Theories of Digital Marketing

Digital marketing, with the Internet as the core medium, achieves brand communication, user interaction, and data analysis through online platforms. Its theoretical foundation mainly includes integrated marketing communication theory, relationship marketing theory, and experiential marketing theory. Integrated marketing communication theory emphasizes multichannel information transmission and unified brand image shaping. Relationship marketing theory focuses on establishing long-term interactive relationships with users, improving user satisfaction and loyalty through personalized services. Experiential marketing theory values user perception and participation experiences, enhancing brand influence through immersive environments and emotional resonance. These theories provide solid theoretical support for the practice of digital marketing.

2.3 Basic Characteristics of Human Settlement Projects

Human settlement projects involve multiple fields such as urban planning, architectural design, and ecological governance. Their core goal is to improve residents' quality of life and the city's sustainable development capacity. These projects often have complexity and comprehensiveness, involving multiple stakeholders such as governments, enterprises, and residents. Implementation of these projects requires balancing ecological conservation, economic development, and social equity, while facing challenges such as large resource input, long cycles, and slow returns. Under the promotion of "Internet Plus," human settlement projects need to break the traditional planning and implementation models, utilize digital technology to enhance decision-making scientificity and public participation, and promote efficient project management and continuous optimization. Through the digital marketing model, human settlement projects can transition from one-way information dissemination to interactive communication, thereby improving the efficiency and

effectiveness of project promotion.

3. INNOVATION DEMAND FOR DIGITAL MARKETING MODELS IN THE CONTEXT OF "INTERNET PLUS"

3.1 Limitations of Traditional Marketing Models

In the era of globalization and rapid information technology development, traditional marketing models have gradually revealed deep limitations. Traditional marketing relies primarily on offline channels, constrained by geographical and temporal limitations, which significantly restrict the efficiency and scope of information dissemination. Additionally, traditional one-way communication methods cannot effectively capture real-time feedback and dynamic demands from consumers, resulting in poor targeting and timeliness of marketing activities. This model often overlooks consumers' sense of participation and experience throughout the entire consumption process, making it difficult to establish long-term brand loyalty. Especially in human settlement projects, traditional marketing models fail to fully showcase the comprehensive advantages and ecological benefits of projects. Due to the involvement of multidimensional information across various domains, traditional media struggle to effectively convey the complex project concepts and values. Moreover, these projects have long decision-making cycles, and there is an urgent need to improve consumer participation and communication efficiency. Faced with fierce market competition and ever-changing consumer demands, traditional marketing strategies prove inadequate.

3.2 Inherent Drivers of Digital Transformation

Digital transformation is an inevitable choice for enhancing enterprise competitiveness and adapting to market changes. In human settlement projects, digital transformation is mainly driven by several factors. The rapid advancement of technology, especially the widespread application of the Internet, the Internet of Things, and artificial intelligence, provides abundant innovative tools and platforms for the industry. These technologies not only improve the efficiency of information collection and processing but also broaden marketing channels and methods. Changes in consumer behavior are also a significant factor driving digital transformation. Modern consumers increasingly rely on the Internet for information acquisition, decision-making, and experience sharing, expecting more convenient and personalized services through digital channels. Therefore, companies need to establish closer connections with consumers through digital means to meet their evolving needs. Increased market competition is another important factor. As industries mature, companies must maintain competitive advantages through innovation. Digital transformation provides new paths for differentiated development, enabling companies to stand out in the competition.

3.3 New Changes in User Experience and Market Demands

With the development of the economy and the improvement of living standards, consumers' expectations for human settlement projects are no longer limited to basic functional satisfaction. They also focus on the overall experience and added value provided by projects. In this context, consumer demands show tendencies of personalization, diversification, and dynamism, with increasingly stringent requirements for user experience. Digital technology plays a core role in enhancing user experience. Through technologies such as virtual reality and augmented reality, consumers can have an immersive experience with project details before making purchasing decisions, leading to more informed choices. This immersive experience enhances their sense of participation and decision-making efficiency, contributing to the attractiveness and competitiveness of projects.

Companies can utilize virtual reality technology to create interactive experiences in exhibitions and sales processes. This application not only improves user satisfaction but also reduces sales cycles and costs. Through virtual reality, companies can effectively convey project design concepts and environmental characteristics, enhancing brand image.

4 KEY ELEMENTS OF DIGITAL MARKETING MODEL INNOVATION

4.1 Online Communication and Brand

Building

In the Internet era, online communication has become an important way to shape brands. Through online platforms, companies can deliver brand messages to a large number of potential consumers in a low-cost and high-efficiency manner. The high interactivity and multimedia characteristics of the Internet allow brands to provide rich content experiences while conveying core values.

Brand building for human settlement projects requires showcasing project uniqueness and social value through online communication. Through carefully designed multimedia content such as videos, animations, and interactive web pages, companies can visually demonstrate the environmental advantages and humanistic design of their projects. This mode of communication not only increases brand exposure but also enhances consumer participation and identification.

4.2 Social Media and User Interaction

As an important platform for digital marketing, social media has become a bridge for interaction between companies and consumers. Through social media, companies can obtain real-time feedback and opinions from consumers, enabling them to adjust marketing strategies and product designs promptly. In human settlement projects, social media can also facilitate community formation and development, enhancing interaction and communication among residents.

Companies can conduct diversified activities through social media, such as online press conferences, user experience sharing, and interactive Q&A sessions, to enhance user stickiness and engagement. This interaction not only helps maintain customer relationships but also attracts potential users, expanding market influence.

4.3 Application of Virtual Reality Technology

The application of virtual reality technology provides new possibilities for the display and marketing of human settlement projects. Through virtual reality, consumers can have a "first-hand experience" of various project details before making a purchase, enabling them to make more informed decisions. This immersive experience enhances user participation and decision-making efficiency, contributing to the attractiveness and competitiveness of projects.

Companies can utilize virtual reality technology to create interactive experiences in exhibitions and sales processes, reducing sales cycles and costs while improving user satisfaction. Through virtual reality, companies can effectively convey project design concepts and environmental characteristics, enhancing brand image.

4.4 Big Data Analysis and Personalized Marketing

Big data analysis is a crucial means to achieve personalized marketing. By collecting and analyzing consumer data, companies can gain in-depth insights into consumer preferences, behavior, and demands, which serves as the foundation for designing personalized marketing activities. Data-driven management of human settlement projects optimizes resource allocation and improves operational efficiency.

Personalized marketing enhances brand loyalty and customer satisfaction, increasing purchase intent. Through big data analysis, companies can predict market trends and consumer demands, optimizing product designs and service processes. In this process, data security and privacy protection are issues that require highly focused attention.

5. INNOVATIVE STRATEGIES FOR DIGITAL MARKETING

5.1 Integrated Marketing Communication Strategy

In the digital age, the integrated marketing communication strategy emphasizes the synergy of multiple channels to achieve brand consistency and maximize the effectiveness of communication. Companies can utilize online and offline resources to deliver brand value and project information through channels such as online advertising, social media, and mobile applications. Integrated marketing not only expands the reach of information dissemination but also enhances consumer awareness and brand recognition.

5.2 User Engagement and Co-creation Strategy

Digital marketing advocates for deep interaction and cooperation with users, enabling companies to obtain valuable market insights and innovation ideas through user participation and feedback. In human

settlement projects, user engagement and co-creation strategies not only improve user satisfaction but also facilitate project optimization and enhancement. Companies can attract user involvement in project design and improvement through online surveys, user polls, and community activities. Co-creation strategies not only enhance the user experience but also strengthen brand affinity and market competitiveness.

5.3 Technological Empowerment and Platform Development Strategy

Technological empowerment is the driving force behind digital marketing innovation. Through technological advancements, companies can enhance the efficiency and effectiveness of marketing activities. It is essential for companies to develop and optimize digital platforms to support efficient information dissemination and convenient user interaction. The platform should possess flexible features and provide a good user experience, facilitating data collection and analysis. Technological empowerment not only improves operational efficiency for companies but also provides consumers with convenient and intelligent services.

5.4 Data-driven Decision-making and Optimization Strategy

In digital marketing, data-driven decision-making and optimization strategies are crucial. Through big data analysis, companies can gain deep insights into market dynamics and consumer demands, optimizing marketing strategies and project design. Data-driven decision-making emphasizes real-time and accurate decision-making, enhancing market responsiveness and decision quality. Companies should establish a robust data management system to ensure data accuracy and security. Furthermore, data privacy protection and compliance with relevant laws and regulations should be prioritized.

6. ETHICAL AND POLICY CHALLENGES IN DIGITAL TRANSFORMATION

6.1 Data Privacy and Security Issues

In the era of Internet Plus, data has become a vital resource for driving digital marketing and business decision-making. However, as data usage becomes more prevalent, privacy and security issues become increasingly prominent. Companies collect vast amounts of user data, including personal information, consumption habits, and geographical location, during the digital marketing process. Data collection and usage should be conducted with respect for user privacy, as any improper operation may lead to privacy breaches and damage trust.

The General Data Protection Regulation (GDPR) in the European Union is a significant legislation in the global data privacy protection field, emphasizing user awareness and data control rights. Companies need to comply with relevant provisions of the GDPR in data processing to ensure the legality and transparency of user data. Additionally, companies should adopt technical and managerial measures to safeguard data security, such as encryption technology, access permissions, and regular security audits. These measures effectively reduce the risk of data breaches and enhance user trust in digital marketing.

6.2 Digital Divide and Social Equity

Digital transformation brings innovation to human settlement projects but exacerbates the issue of the digital divide. The digital divide refers to the unequal access to digital resources caused by factors such as geography, economy, and education. This phenomenon is widespread globally, particularly evident in developing countries and regions. The digital divide hinders social fairness and justice and constrains overall social progress.

In digital marketing, companies should actively take measures to mitigate the impact of the digital divide on users. By providing digital literacy training and offering affordable or free digital services, companies can assist more people in enjoying the convenience brought by digitization. In human settlement projects, companies should pay attention to the digital needs of vulnerable groups, ensuring that project information and services are widely accessible and usable.

6.3 Government Regulation and Policy Support

Digital transformation involves not only technological issues but also complex policy and regulatory challenges. Government regulations play a crucial role in guiding and regulating corporate behavior. Effective regulatory policies can ensure fair market

competition, protect consumer rights, and promote the healthy development of industries. As digital marketing models continue to innovate, governments need to adjust and update policies promptly in response to market changes and new challenges.

Policy support is significant in addressing ethical and social issues in digital transformation. Governments can provide support for companies' digital transformation through legislation, financial subsidies, and public projects. Particularly in data privacy protection and narrowing the digital divide, government guidance and supervision are essential. Through collaborative efforts among the government, companies, and society, sustainable development in digital transformation can be achieved.

7. CONCLUSION

Research on innovative digital marketing models for human settlement projects in the context of Internet Plus is a complex topic that involves technology application, market strategy, and social responsibility. Digital transformation provides extensive opportunities and innovation space for human settlement projects but also presents challenges such as data privacy, security, and the digital divide. Companies need to strike a balance between technological innovation and social responsibility to achieve sustainable marketing models.

Research indicates that by utilizing online communication, social media, virtual reality, and big data analysis, companies can enhance brand value and user experience, achieving innovative marketing models. Moreover, companies should strengthen data security management, pay attention to social equity, and actively respond to government regulatory policies in the face of ethical and policy challenges in digital transformation.

ACKNOWLEDGEMENTS

Research on digital marketing model innovation of Human settlement environment project under the background of Internet + Research results Project sponsor: Sichuan Settlement Culture and Technology Research Institute (RJWH2024013).

REFERENCES

[1] Xu Tian, Peng Huan. Research on the High-Quality Development of Luojiaba Town from the Perspective of Rural Revitalization [J]. Rural Economy and Science and Technology, 2023, 34(18):140-143. DOI:10.3969/j.issn.1007-7103.2023.18.039.

[2] Xie Jia. Feasibility Analysis of the Development Project of a Three-Dimensional Digital City Decision Support System [D]. University of International Business and Economics, 2011. DOI:10.7666/d.y2131069.

[3] Wang Jinxiao, Tourism Management. Research on the Driving Mechanism and Effect Evaluation of Digital Village Construction Promoting High-Quality Development of Ethnic Villages Tourism [D]. Guizhou University [2024-11-11].

[4] Guan Fangming. Research on the Path of Smart City Construction in China in the Era of Digital Economy [J]. Marketing World, 2024(9).

[5] Song Ding. Can the Development of Industrial Parks Break Through These Nine Dilemmas? [J]. Special Zone Economy, 2023(6):25-26.

Research on the Design and Evaluation of Ideological and Political Education Courses for University Students

MingMing Liu
Zibo Vocational Institute, Zibo, Shandong 255314, China

Abstract: This study explores the theoretical framework for designing and evaluating ideological and political education courses for university students. Amidst global educational shifts, such education plays a crucial role in holistic student development. Through a literature review, this paper systematically examines existing research, analyzing foundational theories and guiding principles. Initially, it reviews the history and objectives of ideological and political education to clarify its role in modern higher education. Key design factors are then explored, including goal setting, content selection, teaching methods, and resource allocation. Integrating educational and psychological theories, a systematic evaluation standard is proposed to assess course effectiveness and potential for continuous improvement. Findings indicate that successful courses should integrate theory with practice, emphasizing value guidance and critical thinking. Evaluation should focus on students' value formation, moral judgment, and social responsibility. This theoretical framework provides educators with a reference to enhance course design and evaluation quality.

Keywords: Ideological and Political Education; Course Design; Course Evaluation; Higher Education; Theoretical Framework

1. INTRODUCTION

1.1 Research Background

Ideological and political education for university students is a unique educational practice amidst globalization and diversity. With rapid information technology development, students now access diverse information sources, presenting new challenges and opportunities for universities. This education not only imparts fundamental political theories but also cultivates social responsibility and moral values, enhancing students' adaptability and competitiveness in society.

The complexity and diversity of societal issues intensify the challenges of ideological education. Guiding students to establish correct values, worldviews, and life perspectives, as well as designing and evaluating effective courses, have become key focuses in educational research.

1.2 Review of Domestic and International Research

International research on ideological education began in the mid-20th century, especially post-WWII when ideological education became crucial in national policies. Western countries integrated civic education into ideological education, emphasizing social responsibility and civic awareness. John Dewey's "Democracy and Education" significantly influenced ideological education by advocating education serving democratic societies.

In China, research began post-reform and opening-up. Zhao Xia explored integrating ideological education into career planning to enhance professional qualities [1]. Bai Lu, Wang Nan, and Bai He examined practical paths in ideological education, emphasizing practice to boost social adaptability [2]. Domestic research focuses on combining theory with practice, using resources and concepts unique to China.

1.3 Research Objectives and Significance

This study aims to develop a systematic framework for designing and evaluating university ideological and political education courses to enhance political literacy and moral cognition. By analyzing influencing factors, it proposes design principles and evaluation methods to support educational practice. The significance lies in providing educators with a

systematic and scientific framework to improve course quality, fostering socially responsible and morally judicious students.

2. THEORETICAL FOUNDATIONS OF IDEOLOGICAL AND POLITICAL EDUCATION FOR UNIVERSITY STUDENTS

2.1 Concept and Characteristics

Ideological and political education guides students in forming correct worldviews, life views, and values through systematic processes. Its purpose is to instill political awareness and moral values, supporting personal and social development. Key characteristics include:

Comprehensive Education: Involves not just political theory but also moral, legal, and mental health education, promoting multidimensional development.

Guidance: Requires clear value orientation to instill political beliefs and moral values, considering national policies and societal needs in course design.

Practicality: Beyond theoretical knowledge, application in real life is crucial. Activities like social surveys and volunteer service should be integral, enabling students to internalize learned concepts.

2.2 Educational and Psychological Theories

Educational theories provide a systematic framework for ideological education. Constructivist theory emphasizes the student's active role in learning, suggesting interactive course activities to boost engagement and autonomy.

Psychologically, personalized education strategies are vital. Developmental psychology highlights differences in cognitive abilities, emotional experiences, and social adaptation across age groups. Erikson's psychosocial development theory emphasizes identity formation in college students. Understanding these aspects aids in designing targeted educational content, enhancing specificity and effectiveness.

Combining educational and psychological theories, ideological education should focus on scientific, systematic, and targeted approaches, integrating theory and practice to comprehensively develop students' political literacy and overall competencies.

3. PRINCIPLES OF IDEOLOGICAL AND POLITICAL EDUCATION CURRICULUM DESIGN

3.1 Goal setting

The goal setting of ideological and political education curriculum should emphasize the hierarchy and systematicness, which mainly includes two dimensions: short-term goal and long-term goal. The short-term goal is to enable students to master basic political theoretical knowledge and establish initial political awareness and values through the curriculum of one semester or one academic year. The long-term goal focuses on the overall development of students, cultivating their social responsibility, moral character and critical thinking skills.

In the process of goal setting, the individual differences of students should be fully considered, and differentiated courses should be designed for students of different grades and majors. Studies have shown that individualized teaching can significantly improve the educational effect [3]. For example, the ideological and political education of lower grade students can focus on the imparts of basic knowledge and the initial guidance of values, while higher grade students should participate more in practical activities and thematic discussions to cultivate their ability to solve practical problems.

3.2 Content Selection

Content selection is the core link of ideological and political education curriculum design, which directly affects the implementation effect of the curriculum and students' learning experience. In order to improve the effectiveness of ideological and political education, the course content should cover the following aspects:

These contents constitute the basis of students' political theory literacy, and through systematic knowledge imparting, students can understand and master the basic political theories and policy guidelines of our country.

The analysis of social hot issues and current affairs and politics shows that college students are in the critical period of value shaping, and social hot issues and current affairs and politics have a greater impact on them. Course content should be combined with the current social hot spots, in-depth analysis and discussion. For example, environmental

protection issues, social justice, globalization and national culture, through the analysis of these issues, students can abstract theoretical problems from real life, and form the ideological quality of patriotism, law-abiding, integrity and friendship.

Moral education and legal education, the complete development of personality is inseparable from the cultivation of moral quality. Through moral education, students can establish a correct view of good and evil, right and wrong. By teaching basic legal knowledge, legal education enhances students' concept of rule of law and cultivates their legal awareness and self-protection ability [4].

3.3 Teaching methods and resource allocation

The choice of teaching method directly affects the effect of ideological and political education and students' learning experience. In the process of teaching, the single lecturing teaching can not meet the diversified learning needs of students. In order to improve the effect of education, we should adopt a variety of teaching methods, including interactive teaching, experiential teaching and project-based teaching.

Interactive teaching enhances students' sense of participation and subjectivity through teacher-student interaction and student-student interaction. Through interactive sessions such as discussion, debate and role play, students are able to deepen their understanding of knowledge and develop their critical thinking and expression skills.

Experiential teaching focuses on practical experience, through social investigation, volunteer service, field visits and other ways, so that students can apply what they learn in class to real life. This teaching method can significantly enhance the effectiveness of ideological and political education, so that students can feel and understand the content of education in their own experience.

By designing specific project tasks, project-based teaching enables students to conduct independent learning and cooperative discussion in the process of project implementation. For example, we can design environmental protection projects, community service projects, etc., through the implementation of projects, to cultivate students' teamwork ability, problem solving ability and social responsibility.

In terms of resource allocation, the use of digital resources can greatly improve the teaching effect. Through multimedia teaching, online courses, virtual experiments and other digital means, enrich the teaching content and form, improve students' learning interest and participation. Teachers' professional quality and teaching level are also important factors affecting the quality of ideological and political education. Strengthening teacher training and enabling teachers to master diversified teaching methods and technical means is an important guarantee for improving teaching effect.

4. DESIGN OF IDEOLOGICAL AND POLITICAL EDUCATION CURRICULUM EVALUATION SYSTEM

4.1 Evaluation indicators and standards

In order to evaluate the effect of ideological and political education curriculum scientifically, it is necessary to establish a scientific and reasonable evaluation index system. The evaluation indicators should comprehensively consider the knowledge grasp, ideological and moral level and practical application ability, including the following aspects:

Students' knowledge of basic political theory is assessed through examinations, tests and other forms. This is the basic index to evaluate the learning effect of students.

Ideological and moral level, including students' values, moral qualities and social responsibility. Students' progress and changes in ideological and moral aspects are assessed through questionnaires, classroom performance and after-class records [5].

Practical application ability, including the ability of students to apply the knowledge of ideological and political education to solve problems in real life. Students' practical application ability was evaluated through project results display, social survey report, volunteer service feedback, etc.

4.2 Evaluation methods and tools

In order to evaluate the effect of ideological and political education courses comprehensively and objectively, a variety of evaluation methods and tools can be used, including quantitative evaluation and qualitative evaluation:

The quantitative evaluation mainly obtains the quantitative data of students' knowledge mastery and ideology and morality through examinations, tests, questionnaires and other forms. Through these quantitative data, we can intuitively understand the learning effect and thought change of students.

By means of teacher evaluation, peer evaluation and self-reflection, the qualitative information of students' thoughts, attitudes and behaviors can be obtained. Through this qualitative information, we can deeply understand the ideological changes and actual performance of students, and provide a basis for education improvement.

The comprehensive quantitative and qualitative method, through multi-dimensional and multi-channel evaluation means, can more comprehensively and accurately evaluate the effect of ideological and political education curriculum, and provide scientific basis and improvement direction for the subsequent curriculum design and implementation.

5. CONCLUSION

Through the research, a set of systematic curriculum design and evaluation system of ideological and political education is proposed, emphasizing the hierarchy and systematization of goal setting, the comprehensiveness and pertinence of content selection, and the diversification and interaction of teaching methods. Through scientific and reasonable evaluation indicators and methods, we can comprehensively and objectively evaluate the curriculum effect and promote the continuous improvement and promotion of ideological and political education.

In order to improve the practical effect of ideological and political education, educators should pay attention to the professional quality and teaching level of teachers, strengthen teacher training and the application of diversified teaching methods. In addition, the rational allocation of teaching resources, especially the use of digital resources, can enrich the form and content of teaching and stimulate students' learning interest and participation.

Future studies can further explore the innovative paths and implementation strategies of ideological and political education in the context of globalization, especially the acceptability and adaptability of students with different cultural backgrounds to ideological and political education. At the same time, interdisciplinary research methods can be explored, and multidisciplinary theories such as pedagogy, psychology, sociology can be applied to the research and practice of ideological and political education in order to enrich and deepen the research content and results.

REFERENCES

[1] ZHAO Xia. Course Design and Evaluation of College Students' Career Planning -A Case study of Nantong University [J]. Hebei Vocational Education, 2009(1). (in Chinese) DOI:10.3969/j.issn.1672-8963.2009.01.065.

[2] Egret, Wang Nan, White crane. An Exploration of the cultivation path of Ideological and Political Education practice in colleges and universities -On the urban survival training of college students [J]. Education teaching BBS, 2018 (16): 2. DOI: CNKI: SUN: JYJU. 0.2018-16-016.

[3] Xu Xiaoning. Discussion on Strengthening Happiness Concept Education of college students -Taking Ideological and moral Cultivation and Basic Law course Teaching as an example [J]. Chizhou college journal, 2012 (03): 95-98. The DOI: CNKI: SUN: CZSF. 0.2012-03-031.

[4] Li Wenchao, Yang Wenqiang. Reform and innovation of curriculum design examination evaluation system research [J]. Computer knowledge and technology: academic edition, 2019, 15 (3): 2. DOI: CNKI: SUN: DNZS. 0.2019-07-064.

[5] Guan Xiaotian, Chen Yingshu, Li Chunshu, et al. Course design grade fuzzy comprehensive evaluation method of research and application [J]. Journal of taiyuan university of technology, social science edition, 2008, 26 (B06): 3. DOI: 10.3969 / j.i SSN. 1009-5837.2008. Z1.016.

[6] It is a case in point. Implementation and Evaluation of Educational Practice Curriculum for Preschool Education in Colleges and universities -Review of the Results-Oriented Educational Practice Curriculum Design for Preschool Education [J]. Science and Technology Management

Research, 2024, 44(1):I0020.
[7] Wei Guangpu, Yu Xiaoyan, Gao Yaohui, et al. Study on Design and Post-use Evaluation of Provincial first-class Landscape Architecture Planning and Design Virtual Simulation Experiment Course -A case study of Inner Mongolia University of Science and Technology [J]. Journal of Higher Education, 2024.
[8] Li Y. A Study on the design and Improvement of Primary School English Curriculum based on value-added evaluation [J]. English Teacher, 2024(10).
[9] Shang Yu, Yang Yu, Wang Jingyan, et al. Design and practice of Medical electron microscope ideological and political course based on BOPPPS model and innovative spirit [J]. Heilongjiang Medical Science, 2024, 47(1):24-26. (in Chinese)
[10] Luo Lei, Li Fang, Ding Yue, et al. Research and practice of Formative evaluation Mechanism of "Food Factory Curriculum Design" based on students' ability to achieve [J]. Agricultural Processing, 2024(8).

Innovative Approaches to College Student Management in the Big Data Era

WenJie Liu
Zibo Vocational Institute, Zibo, Shandong 255314, China

Abstract: The advent of big data presents unprecedented challenges and opportunities for college student management. This paper explores leveraging big data technology to innovate student management, thereby enhancing efficiency and effectiveness. Through a systematic literature review, we outline existing theoretical frameworks on data-driven management transformation, and discuss the specific applications of big data in college management in the context of technological advancements. We analyze the potential of big data in predicting student behavior, personalized education, and mental health monitoring, proposing corresponding theoretical models. Additionally, we compare domestic and international college management practices, highlighting technological gaps and development paths. Findings suggest that effective use of big data can achieve precise behavior prediction and personalized guidance, enhancing the precision of college management. By strengthening data sharing and privacy protection mechanisms, deeper integration of information technology and management can be achieved. This study concludes that colleges must adopt new management approaches, enhance data analysis capabilities, and promote information transparency to meet the needs of modern student management. It provides new perspectives and theoretical support for optimizing college management in the big data era.

Keywords: Big Data; College Management; Innovation; Informatization; Personalized Education

1. INTRODUCTION

1.1 Research Background and Significance

The era of big data has arrived, and the rapid development of information technology has brought transformations across various industries, especially in the field of education. In higher education, data has become a crucial factor influencing decision-making and management. the management of university students, as an essential part of daily operations in higher education institutions, urgently requires innovation through big data technology. Big data can not only provide more precise allocation of educational resources but also help administrators understand student needs and optimize management decisions. In this context, research on the application of big data in higher education management holds both theoretical and practical significance.

1.2 Review of Domestic and International Research Status

There have been numerous explorations in the application of big data in higher education management both domestically and internationally [1] [2]. Some foreign universities have achieved certain successes in monitoring student behavior and optimizing courses using big data, particularly in the field of personalized education. Many universities have established systematic data analysis platforms. However, domestic universities are still in the early stages of implementing big data technology. Although the concepts and methodologies are becoming widespread, the actual application and technical maturity still need improvement. Literature [3] and [4] indicate that domestic research is mostly focused on theoretical discussions, lacking practical frameworks and specific implementation paths.

2. APPLICATION OF BIG DATA TECHNOLOGY IN HIGHER EDUCATION MANAGEMENT

2.1 Basic Concepts and Characteristics of Big Data

Big data refers to data sets characterized by high volume, high velocity, variety, and veracity. In higher education management, big

data means extracting useful information from vast amounts of data to support decision-making. the variety of big data comes from the wide range of data sources, such as course grades, online behavior, and extracurricular activity participation, all of which are vital data sources for higher education management. High velocity is reflected in the rapid collection and processing of data, allowing for real-time analysis.

2.2 Current Status and Challenges of Higher Education Management

Currently, higher education management faces numerous challenges, including diverse student populations, personalized educational needs, and information silos. Traditional management models, due to outdated information collection methods, struggle to meet the demands of new situations. Literature [5] points out that the introduction of big data technology can effectively address information asymmetry and resource wastage issues. However, the widespread application of this technology is still constrained by factors such as data privacy, security, and data-sharing mechanisms. Domestic research emphasizes building bridges between technology and management, exploring shifts in management concepts and the collaborative development of technology applications.

In practical applications, how to scientifically process student information and transform it into usable management strategies is a common challenge for universities. Data analysis has shown that students' behavior data during their time at university, such as attendance rates and library usage frequency, are closely related to their academic performance and mental health. Therefore, administrators need to consider how to design appropriate analysis models to support decision-making and achieve refined management.

3. THEORETICAL FRAMEWORK FOR BIG DATA-DRIVEN INNOVATION IN HIGHER EDUCATION MANAGEMENT

3.1 Data-Driven Management Innovation Theory

In the era of big data, data-driven management innovation theory has become a core concept in higher education management. This theory emphasizes that through the collection, analysis, and application of massive data, a deep understanding of student needs and behaviors can be achieved, thereby optimizing higher education management. Combining management innovation theory with big data technology can enhance the scientific and precise nature of management decisions. Big data technology, through real-time monitoring and analysis, can promptly identify issues in students' academic, life, and psychological aspects and provide targeted solutions. For example, data on students' classroom performance, library usage, and extracurricular activity participation can offer comprehensive student behavior profiles. Thus, administrators can make more targeted and effective policies and measures.

3.2 The Role of Big Data in Predicting Student Behavior

The application of big data in predicting student behavior has gradually become an important tool in higher education management. By collecting and analyzing a large amount of student behavior data, administrators can predict trends in students' academic performance, attendance rates, interests, and psychological states. This predictive ability can help administrators identify and prevent potential problems early on and provide personalized educational guidance. For instance, by analyzing data on students' attendance records, grade reports, and assignment submission times, potential academic difficulties can be identified early, and timely help and support can be provided. Additionally, by monitoring social media and online behavior data, schools can understand students' psychological states in real-time and offer necessary mental health services. Yang Weirong mentioned the importance of improving management models through big data technology in "Research on Innovation in Higher Education Management in the Big Data Era" [1].

3.3 Application of Big Data in Personalized Education

Personalized education is a significant development direction in contemporary higher education. the introduction of big data technology provides technical support for personalized education. By analyzing data on students' learning behaviors, interests, and individual characteristics, schools can tailor

personalized learning plans and educational programs for each student. For example, based on data from learning management systems, schools can analyze students' learning habits and effectiveness, providing personalized learning suggestions and resource recommendations. Additionally, by analyzing data on students' participation in online courses and learning outcomes, schools can adjust teaching strategies in a timely manner to improve teaching effectiveness. Xue Lin mentioned the application of information technology in personalized education in "Innovative Research on Informationization of Higher Education Student Management in the Big Data Era" [2].

4. PATHWAYS AND STRATEGIES FOR INFORMATIONIZATION IN HIGHER EDUCATION MANAGEMENT

4.1 Application Strategies of Information Technology in Higher Education Management

In the era of big data, the construction of informationization in higher education management needs to be considered and implemented from multiple aspects. First, it is essential to establish comprehensive data collection and management systems to ensure the completeness, accuracy, and timeliness of data. By collecting data from multiple channels and dimensions, such as class attendance, exam scores, and campus card usage, a comprehensive understanding of students' learning and living conditions can be achieved. Additionally, the construction of information systems needs to strengthen data analysis and mining capabilities, utilizing big data technology to perform deep analysis and intelligent processing of massive data. For example, machine learning and artificial intelligence algorithms can be used to model and predict student behavior data, providing scientific basis for management decisions. Furthermore, it is necessary to build efficient data transmission and sharing platforms to ensure data interoperability and collaborative work among different departments, thereby improving management efficiency and service quality.

4.2 Establishing Data Sharing and Privacy Protection Mechanisms

In the process of informationization in higher education management, issues of data sharing and privacy protection cannot be ignored. Data sharing can promote timely information transmission and effective resource utilization, but it also poses risks of data breaches and privacy infringements. Therefore, higher education institutions need to establish strict data sharing and privacy protection mechanisms to ensure the security and lawful use of information. Firstly, clear data sharing policies and access management systems should be formulated to regulate the processes of data collection, storage, transmission, and usage. For instance, data encryption, access control, and log auditing technologies can be employed to ensure data security and traceability. Additionally, it is crucial to enhance the training and management of data users, raising their awareness and sense of responsibility regarding data security to prevent data misuse and breaches. Bian Feng highlighted the importance of data privacy protection in "Innovative Pathways for Higher Education Student Management in the Big Data Era" [5].

5. COMPARATIVE ANALYSIS OF HIGHER EDUCATION MANAGEMENT MODELS DOMESTICALLY AND INTERNATIONALLY

5.1 Current Status of Big Data Application in Domestic Higher Education Institutions

The application of big data in domestic higher education institutions is continuously developing and innovating, but there are still some problems and challenges. Currently, many institutions have started using big data technology for student management and teaching research. For example, some institutions have established intelligent campus systems to monitor and analyze student behavior data in real-time. Through smart campus platforms, schools can monitor students' attendance, library borrowing records, and campus card usage, and use big data technology for comprehensive analysis to fully understand and assess students' learning and living habits. However, there are still issues of data silos in domestic higher education institutions, where information exchange between departments is not smooth, and data resources cannot be fully shared and utilized. Liu Jie pointed out the shortcomings

in data sharing and collaborative work in domestic higher education institutions in "Innovative Research on Higher Education Research Management in the Big Data Era" [3].

5.2 Learning from the Experience of Big Data Application in Foreign Higher Education Institutions

Some foreign higher education institutions have relatively mature practical experience in the application of big data, which is worth learning from by domestic institutions. Foreign institutions typically establish unified student information management systems to achieve comprehensive data tracking and analysis of students from enrollment to graduation. They emphasize data openness and sharing, establishing comprehensive data sharing mechanisms and resource pools. For example, some universities in the United States use big data analysis systems to track students' academic performance and behavior in real-time, providing personalized academic guidance and support promptly. Additionally, foreign institutions have strict management measures in privacy protection and data security, using encryption technology and access control to ensure the security and privacy of student data. Wang Yufa mentioned the advanced experience of foreign higher education institutions in data management in "Innovative Pathways for Refined Budget Management in Higher Education in the Big Data Era" [6].

6. CONCLUSION

Through the innovative application research of big data in the management of university students, this paper draws the following conclusions. Big data technology, as an important tool in modern management, can effectively enhance the scientific, precise, and efficient nature of higher education management. Through data-driven management innovation theory, institutions can deeply understand students' needs and behaviors, providing data support for management decisions. In terms of student behavior prediction and personalized education, big data technology has shown great application potential. the application of information technology and the establishment of data sharing and privacy protection mechanisms are key pathways to achieving innovation in higher education management.

Future research can further explore the application of big data in higher education management from the following aspects. Firstly, it is necessary to continuously explore the application of big data technology in more management fields, such as campus safety, mental health, and career development. Secondly, artificial intelligence and machine learning technologies can be utilized to improve the accuracy and intelligence of data analysis and prediction. Additionally, institutions should strengthen cooperation with enterprises and research institutions to jointly promote the research and application of big data technology. Finally, attention should be paid to data ethics and privacy protection, establishing sound data security supervision mechanisms to improve the transparency and legality of data usage. Through these efforts, the continuous innovation and development of higher education management can be promoted, providing students with more scientific, personalized, and efficient educational management services.

REFERENCES

[1] Yang Weirong. Big data era college scientific research management innovation research [J]. Science and technology management research, 2015, 000(014):1-4. DOI: 10.3969/j. i SSN. 1000-7695.2015.14.001.

[2] Xue Lin. Innovative Research on informatization of University Student management in the era of Big Data [J]. Fujian province quality management, 2016, No. 270(5):10. DOI: CNKI: SUN: FJZG. 0.2016-05-005.

[3] inflow. Big data era college scientific research management innovation research [J]. Journal of law and society: the ten-day, 2017(30):2. DOI: CNKI: SUN: FZSL. 0.2017-30-089.

[4] Xi Chao, Tan Shujuan, Bai Ying, et al. Big data era education of university students management innovation exploration [J]. Journal of yunnan agricultural university: social science edition, 2017, 11(4):5. DOI: 10.3969/j. i SSN. 1004-390 - x (s). 2017.04.021.

[5] Bian Feng. Research on the innovative

path of college students' Educational management in the era of Big Data [J]. Education Informatization Forum, 2021, 5(1):2.
[6] Wang Yufa, Wang Minghui. Research on fine innovation path of University budget management in the era of Big Data [J]. Journal of Business Accounting, 2024(5):102-106.
[7] Liu Shuhua. Big data era of enterprise financial management innovation research [J]. Journal of accounting study, 2024(5):28 and 30, DOI: 10.3969/j. i SSN. 1673-4734.2024.05.013.
[8] Jia Wan Chao. Research on Innovation and Strategies of college Student Management in the Era of Big Data [J]. Science and Education Guide, 2024(9):132-134.
[9] Li Yiying. the innovative path of college career guidance education in the era of Big Data [J]. Knowledge Economy, 2024(16):123-125. (in Chinese)

Advancing Chemical Engineering in Future Urban Development

ZhiYuan Mao
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: Future urban development faces challenges such as limited resources, environmental pollution, and climate change. Chemical engineering is pivotal in addressing these issues, steering cities towards sustainability and smart growth. This study explores the role of chemical engineering in future urban development, focusing on innovative applications in energy, environmental management, water resource utilization, and materials science. Utilizing a literature review and trend analysis, the paper systematically examines the multidisciplinary applications of current chemical engineering technologies in urban development. the analysis begins with energy applications, highlighting breakthroughs in hydrogen energy and fuel cells in transportation. It then explores comprehensive systems in water resources and environmental management, including multi-objective wastewater control and green chemistry implementation. Lastly, it investigates innovations in materials science through reforms in chemical thermodynamics theory and their applications in construction and infrastructure. the literature review reveals that chemical engineering significantly enhances urban energy efficiency and pollution reduction and plays a crucial role in transforming urban infrastructure towards efficiency and intelligence. the findings indicate that the sustainability of future urban development will largely depend on technological advancements in chemical engineering and interdisciplinary collaboration, injecting new vitality and innovative momentum into urbanization.

Keywords: Chemical Engineering; Future Cities; Sustainable Development; Energy Management; Materials Science

1. INTRODUCTION

1.1 Research Background and Significance

Rapid urbanization challenges cities with dual pressures of resource scarcity and environmental stress. By 2050, 68% of the global population is expected to reside in urban areas, demanding advanced energy, transportation, and environmental infrastructures. Chemical engineering, a multidisciplinary applied science, plays a crucial role in enhancing resource efficiency and reducing environmental impact. Its innovations drive sustainable and efficient urban development.

1.2 Review of Domestic and International Research

Internationally, chemical engineering technologies in energy conversion, pollution control, and resource recycling are well-developed. the U. S. National Nanotechnology Initiative highlights the potential of nanomaterials in energy efficiency, while Europe's Green Chemistry Contract promotes sustainable practices. In China, the strategic emphasis on innovation has underscored chemical engineering's importance in urban development. the Chinese Academy of Sciences notes the necessity of aligning urbanization with environmental protection, with chemical engineering innovations as a key enabler. However, there remains a gap in the integration of industrial applications and technological innovation compared to developed nations.

1.3 Research Objectives and Methods

This study aims to assess the role of chemical engineering in future urban development, evaluating its potential in energy, water resources, environmental management, and materials science through literature review and trend analysis. the focus includes hydrogen technology, renewable energy, green chemistry, and novel material applications. Methods involve systematic literature reviews and quantitative data analysis to elucidate trends and implementation pathways in urban development.

2. APPLICATIONS OF CHEMICAL ENGINEERING IN URBAN ENERGY

2.1 Advances in Hydrogen Energy and Fuel Cells

Hydrogen energy, a clean and efficient energy form, gains attention due to its CO2-free nature. Chemical engineering enhances hydrogen production, storage, and transport, facilitating its practical use. Electrolysis of water emerges as a promising green hydrogen production method. the International Energy Agency forecasts global hydrogen demand to reach 70 million tons by 2030, offering vast innovation opportunities in production technologies. Fuel cells, critical in hydrogen energy utilization, convert chemical energy to electricity efficiently, with transportation applications like hydrogen fuel cell vehicles gaining strategic importance.

2.2 Chemical Engineering Solutions for Renewable Energy

As reliance on renewable energy grows, chemical engineering becomes pivotal in optimizing energy conversion and storage. Efficient utilization of solar, wind, and biomass energy requires advances in materials selection, process optimization, and system integration. In solar technology, high-efficiency materials like perovskite solar cells show market potential, exceeding traditional silicon cells in conversion efficiency. In biomass energy, catalyst optimization and reaction condition adjustments enhance biofuel production efficiency. Bloomberg New Energy Finance predicts renewable energy will comprise 62% of the global energy mix by 2050, providing a broad platform for chemical engineering applications.

3. INNOVATIONS IN WATER RESOURCES AND ENVIRONMENTAL MANAGEMENT

3.1 Multi-Objective Control in Urban Wastewater Treatment

Urban wastewater treatment faces challenges of high volume, diverse pollutants, and stringent standards. Chemical engineering innovations support water resource recycling and environmental protection. Multi-objective control integrates physical, chemical, and biological processes to optimize water quality and energy conservation. Innovations like advanced coagulants improve treatment efficacy and reduce chemical usage. Nanostructured composite coagulants enhance removal efficiency of fine particulates by over 20% (Zhang et al., 2023). Membrane separation advances, particularly nanofiltration, improve removal of organic pollutants and heavy metals, optimizing water quality while reducing energy consumption and sludge production.

3.2 Applications of Green Chemistry in Pollution Control

Green chemistry aims to minimize harmful substance generation through innovative synthesis processes. It plays a crucial role in pollution control by designing eco-friendlier catalysts and reaction pathways. In air pollution control, chemical engineering innovations have enhanced industrial emissions treatment efficiency. Selective Catalytic Reduction (SCR) technology achieves over 90% nitrogen oxide removal using vanadium-titanium catalysts effective at low temperatures (Li et al., 2022). In soil remediation, chemical oxidation with efficient oxidants rapidly degrades pollutants, reducing organic contaminants, demonstrating green chemistry's practical potential.

4. ADVANCES IN MATERIALS SCIENCE THROUGH CHEMICAL ENGINEERING

4.1 Application of New Materials in Urban Infrastructure

Accelerated urbanization heightens the importance of advanced materials in infrastructure. Chemical engineering-driven materials not only exhibit superior performance but also lessen environmental impact over their lifecycle. Ultra-high-performance concrete (UHPC), optimized through chemical engineering, offers exceptional strength and durability, extending the lifespan of bridges and tunnels. Smart materials, like phase change materials (PCM), offer novel approaches to building energy efficiency by storing and releasing thermal energy through chemical reactions. Studies indicate PCM-enhanced building materials improve energy efficiency by over 25% (Wang et al., 2022), exemplifying breakthroughs in materials science and their foundation for sustainable urban development.

4.2 Impacts of Reforms in Chemical

Thermodynamics

Chemical thermodynamics, foundational to chemical engineering, undergoes continuous reform to address complex processes. Reforms incorporate non-equilibrium thermodynamics and multiscale modeling for precise reaction system analysis and prediction. These advancements show significant advantages in new energy development. Improvements in hydrogen fuel cell thermodynamic efficiency through catalyst design and electrolyte material selection have lowered operational temperatures and increased efficiency by 15%. Innovations in chemical thermodynamics underscore chemical engineering's irreplaceable role in advancing new energy technologies and enhancing urban energy efficiency.

5. INTERDISCIPLINARY COLLABORATION AND FUTURE URBAN DEVELOPMENT

5.1 Integration of Chemical Engineering and Information Technology

The integration of chemical engineering with information technology holds immense potential for future urban development, acting as a catalyst for comprehensive urban smart development. Advances in information technology, such as the Internet of Things (IoT), big data, and artificial intelligence (AI), provide new tools and methods for chemical engineering. This integration not only enhances process efficiency but also introduces novel research and application perspectives.

IoT enables unprecedented precision in monitoring and managing chemical processes, with real-time data collection and analysis allowing for immediate feedback and optimized operational conditions. For instance, sensor networks can continuously monitor critical parameters like temperature, pressure, and concentration in reactors, achieving precise process control. Big data analytics offers deeper process insights by uncovering hidden patterns from historical data, guiding process optimization and new technique development.

AI applications usher chemical engineering into an era of intelligent process optimization. Machine learning algorithms handle complex nonlinear process models, predict system behavior, and optimize parameter selection, enhancing production efficiency and stability. Studies show that AI algorithms can reduce chemical process energy consumption by over 15%, advancing process levels and facilitating the development of new materials and technologies.

5.2 Innovative Models in Multidisciplinary Collaboration

The complexity and diversity of future cities necessitate innovative models of multidisciplinary collaboration. Chemical engineering, as a core discipline, must collaborate closely with other fields to address urban development challenges and opportunities. Cross-disciplinary integration with fields such as biotechnology, environmental science, and materials science is driving innovative advancements in chemical engineering.

In environmental management, the synergy between chemical engineering and biotechnology has developed efficient pollution control technologies. Combined chemical catalysis and microbial degradation effectively remove organic pollutants from water, enhancing treatment efficiency and minimizing secondary pollution. Collaboration between materials science and chemical engineering has spurred the creation of novel materials like self-cleaning surfaces and high-strength lightweight alloys, offering superior options for construction and transportation.

Urban planning and chemical engineering collaboration enhances urban sustainability by optimizing energy, transportation, and water resource systems. Multidisciplinary collaboration not only fosters technological advancements but also promotes knowledge exchange across fields, breaking new ground in innovation models.

6. CONCLUSION

Chemical engineering plays a critical role in future urban development, driving innovations in energy, environmental management, and materials science. Integration with information technology has propelled chemical engineering into intelligent advancements, optimizing processes and improving resource efficiency.

As a bridging discipline in interdisciplinary collaboration, chemical engineering facilitates cross-field interactions, advancing sustainable urban development.

In response to challenges like resource scarcity and environmental pressure, chemical engineering must continually innovate and evolve to meet future urban demands. Through interdisciplinary cooperation and technological updates, chemical engineering will provide more efficient and environmentally-friendly solutions for future cities. Ongoing research and practice will pave new pathways for urban development, creating a better living environment.

REFERENCES

[1] Huang, J., & Wu, Y. (2004). Fuel Cell Vehicles: the Power for Future "Hydrogen Economy. " Urban Vehicles, (1), 24-25.

[2] Hao, X., Xing, H., & Qiu, F. (2011). Integrated Water and Resource Management System for Sustainable Urban Development. China Water & Wastewater, 27(2), 7. DOI: CNKI:SUN:GSPS. 0.2011-02-007.

[3] Qin, F. (2024). Development of Performance Standards for High School Chemistry. Qufu Normal University. DOI: CNKI:CDMD:2.1012.384105.

[4] Cao, W., Xiao, A., He, G., et al. (2024). Exploration and Practice of Chemical Thermodynamics Theory and Experimental Teaching Reform in the Context of "Dual Carbon. " Innovative Education Research, 12(9), 4. DOI: 10.12677/ces. 2024.129629.

[5] Xu, Y. (2016). Future Trends and Role of Green Chemical Engineering and Technology. Engineering and Technology (Abstract Edition), 000(002), 00275-00275.

[6] Zheng, B., Deng, H., Yan, Y., et al. (2005). Analysis of Future Energy Consumption and Environmental Impact in China. Environmental Science, 26(3), 6. DOI: 10.3321/j. issn:0250-3301.2005.03.001.

[7] Zheng, B., Zhao, J., Deng, H., et al. (2004). Analysis of Future Energy Consumption and Environmental Impact in China. In Proceedings of the Seventh National Member Congress of the Ecological Society of China.

[8] Huang, M., & Jia, R. (2011). the Development Path of Polyurethane Elastomer in China after the Financial Crisis. Chemical Propellants and Polymer Materials. DOI: CNKI:SUN:HXTJ. 0.2011-01-003.

[9] Wang, X., Liu, J., Ren, N., et al. (2024). Study on the Concept and Model of Multi-objective Control in Urban Wastewater Treatment Processes. In Proceedings of the 2014 Annual Conference of the Chinese Society for Environmental Sciences.

[10] Li, J., Shi, Z., Gao, Q., et al. (2012). Research Progress and Prospects in the Hotspot Areas of Urban Geochemistry in China. Geophysical and Geochemical Exploration, 36(3), 429-434.

[11] Zhai, H., Liao, S., Yang, D., et al. (2007). Research on the Development Trend of Commercial Concrete in Anhui Province. Concrete and Cement Products, (1), 3. DOI: JournalArticle/5aea3024c095d713d8a4218e.

[12] Ma, Q. (2020). Development and Application of Digital Imaging and Green Technology in Geotechnical Engineering. Metallurgical Journal, 5(11), 135-136.

[13] Li, J., Ni, S., Zhang, C., et al. (2009). Overview of Research Progress in Hotspot Areas of Urban Geochemistry.

Implementation Models of Interdisciplinary Integration in Rehabilitation Medical Vocational Education

Lei Qu
Zibo Vocational Institute, Zibo, Shandong 255314, China

Abstract: This study explores implementation models of interdisciplinary integration within rehabilitation medical vocational education, focusing on enhancing comprehensive skills and innovation. Through a systematic literature review and analysis of relevant theories across journals and books, the theoretical foundation and applications of interdisciplinary integration in various educational contexts are outlined. Utilizing theoretical analysis and comparative research, the study examines how to effectively integrate multidisciplinary knowledge into rehabilitation education to boost students' competitiveness and comprehensive abilities. The current state of rehabilitation education is analyzed, followed by the application and potential advantages of interdisciplinary integration. Findings suggest that such integration enriches the knowledge structure, promoting multidimensional thinking and problem-solving skills. The study further discusses strategies for implementation, including curriculum design, teacher training, resource sharing, and evaluation systems. It proposes a model involving interdisciplinary teaching teams, diverse course content, and continuous evaluation to advance integration practices. This model aims to break disciplinary barriers, enhance education quality, and offer students expanded opportunities and experiences to meet the high demand for comprehensive talents in modern rehabilitation medicine.

Keywords: Interdisciplinary Integration; Rehabilitation Medicine; Vocational Education; Implementation Model; Theoretical Exploration

1. INTRODUCTION

1.1 Research Background and Significance

Rehabilitation medical vocational education holds a crucial position in modern medical education. With the advent of an aging society, the increase in chronic diseases, and rising quality-of-life demands, the need for rehabilitation professionals is becoming more urgent. However, traditional rehabilitation education's singular focus and disconnect between theory and practice hinder the cultivation of high-level talent with comprehensive skills and innovation capabilities. Interdisciplinary integration has thus become essential in reforming and advancing rehabilitation medical vocational education, aiming to break down disciplinary barriers and enhance students' overall competencies and practical abilities.

The application of interdisciplinary integration in rehabilitation education not only meets the diverse and personalized needs of modern rehabilitation therapy but also drives educational innovation and quality improvement. By organically integrating knowledge from different disciplines, students gain a more comprehensive knowledge system and stronger practical skills, providing new impetus and direction for the development of rehabilitation education. Highlighting the academic and industry focus on this issue, further research on the implementation models of interdisciplinary integration in rehabilitation education is particularly crucial.

1.2 Review of Domestic and International Research

A review of domestic and international studies on interdisciplinary integration and rehabilitation education reveals extensive exploration and practice by foreign scholars. Countries like the United States, Germany, and Japan have early adopted interdisciplinary educational models in rehabilitation, integrating medical, humanities, and social sciences to build diverse education systems

that enhance students' comprehensive skills and adaptability. Wu Jiaxin (2024, Reference [1]) discusses how sports industry innovation driven by new productivity also supports interdisciplinary integration.

In China, research on interdisciplinary integration in rehabilitation education is gradually emerging. More scholars are focusing on how to improve the effectiveness and innovation of rehabilitation education through interdisciplinary approaches. Tao Xin and Wang Shuxin (2024, Reference [3]) explore the design and practice of AI-assisted art therapy courses under community support systems, providing valuable insights for integrating art and technology in rehabilitation education. Zhang Zengwang and Xie Qiufan (2024, Reference [6]) discuss the integration of art therapy and rehabilitation, further reflecting the application trend of interdisciplinary concepts in rehabilitation education.

Despite these efforts, domestic research is generally in the exploratory phase, lacking systematic and practical depth, and comprehensive theoretical guidance and implementation paths are missing. Therefore, systematic theoretical analysis and practical summarization are urgently needed to provide theoretical support and practical pathways for the scientific implementation of interdisciplinary integration in rehabilitation education.

2. THEORETICAL FOUNDATION

2.1 Definition and Theoretical Framework of Interdisciplinary Integration

Interdisciplinary integration involves the amalgamation of different disciplinary knowledge frameworks to create a more comprehensive educational model. It encompasses traditional single-discipline knowledge while emphasizing the interconnectivity and complementarity among various disciplines, aiming to cultivate students' comprehensive skills and innovation capabilities. The theoretical framework includes knowledge integration theory, systems science theory, and educational theory, which collectively underpin the scientific and feasible application of interdisciplinary integration in education.

Knowledge integration theory posits that disciplinary knowledge is interrelated and symbiotic. Systems science theory emphasizes holistic and complex integration to maximize the utility of knowledge. Educational theory focuses on the diversity and adaptability of educational goals and teaching methods, promoting all-around student development through the organic integration of different disciplines.

In rehabilitation medical vocational education, interdisciplinary integration spans medical knowledge and extends to psychology, sociology, engineering, art therapy, sports, and more. This integration fosters students' comprehensive qualities and practical abilities.

2.2 Characteristics and Needs of Rehabilitation Medical Vocational Education

Rehabilitation medical vocational education features distinct disciplinary characteristics and educational needs. It covers a broad spectrum of knowledge, including foundational medical knowledge, psychology, sociology, engineering, and more. This necessitates not only solid medical knowledge but also the cultivation of comprehensive qualities and practical abilities to meet complex and changing real-world demands.

With advancements in modern medical technology and evolving societal needs, the demand for rehabilitation education is continually changing. An aging society and the rise of chronic diseases heighten the urgent need for rehabilitation professionals. Additionally, the diverse and personalized requirements of rehabilitation therapy call for ongoing updates and enhancements in educational models to develop high-level professionals with comprehensive skills and innovative capabilities.

3. NECESSITY OF INTERDISCIPLINARY INTEGRATION

3.1 Challenges in Rehabilitation Medical Education

Rehabilitation medical education faces several significant challenges, primarily the issue of disciplinary singularity. Traditional education often focuses on single-discipline knowledge, neglecting the integration of multidisciplinary knowledge and the cultivation of comprehensive skills. This leads to a lack of systematic solutions and innovation

capabilities among students when facing complex rehabilitation problems.

Another challenge is the gap between theory and practice. Rehabilitation medicine is inherently practical, requiring a strong combination of theoretical knowledge and practical skills. However, traditional education often emphasizes theory over practice, resulting in students struggling to apply learned knowledge in real-world scenarios, thereby affecting the effectiveness and quality of rehabilitation treatment.

Moreover, the development of modern rehabilitation medicine necessitates the continuous introduction of new technologies and methods, such as artificial intelligence, virtual reality, and bioengineering. Traditional education models struggle to update and adjust in a timely manner, leading to a disconnect between academic knowledge and modern technological advancements, making it difficult for students to adapt to new technologies and methods.

3.2 Advantages of Implementing Interdisciplinary Integration

Implementing interdisciplinary integration can effectively address the challenges in rehabilitation medical education, enhancing educational quality and students' comprehensive skills. By integrating multidisciplinary knowledge, educational content and knowledge systems are enriched. Students not only learn medical knowledge but also acquire insights from psychology, sociology, engineering, and art therapy, fostering their comprehensive qualities and innovative capabilities.

Interdisciplinary integration promotes a close link between theory and practice. By introducing multidisciplinary practical courses and training projects, students can master theoretical knowledge through hands-on experience, improving their practical skills. This educational model not only enhances students' practical abilities but also strengthens their overall problem-solving skills.

The interdisciplinary model emphasizes the introduction of modern technologies and methods, such as artificial intelligence, virtual reality, and bioengineering, enhancing students' technical literacy and adaptability. Through the organic integration of multidisciplinary knowledge, students can better adapt to the rapid developments in modern rehabilitation medicine, mastering new technologies and methods, thus improving the effectiveness and quality of rehabilitation treatments.

Interdisciplinary integration not only enhances the quality of rehabilitation medical vocational education but also cultivates high-level professionals with comprehensive qualities and innovative capabilities, providing robust support for the development of modern rehabilitation medicine. The implementation of interdisciplinary integration in rehabilitation medical education, supported by theoretical and practical foundations, presents both challenges and opportunities. Through systematic theoretical analysis and practical summarization, providing theoretical support and practical pathways for scientific implementation is crucial for innovative development in rehabilitation medical education.

4. IMPLEMENTATION MODEL DESIGN

4.1 Curriculum Design and Diversified Content

In the process of implementing interdisciplinary integration, curriculum design is a key component. For rehabilitation medical vocational education, curriculum design should consider the integration of multidisciplinary knowledge. Besides traditional rehabilitation courses, relevant courses from psychology, sociology, engineering, and art therapy should be introduced. For instance, psychology courses can help students understand patient psychology and improve communication skills; sociology courses can highlight the importance of social support systems for comprehensive rehabilitation plans; engineering courses can introduce advanced rehabilitation equipment and technical knowledge, enhancing students' technical application skills; art therapy courses can promote psychological rehabilitation.

Curriculum content design should not only delve into theoretical knowledge but also incorporate a substantial proportion of practical courses. Through multidisciplinary training projects, students can deeply understand the application of various

disciplinary knowledge in practical operations, thereby enhancing their knowledge level and practical ability.

For example, a comprehensive training project such as "Application of Virtual Reality Technology in Rehabilitation Therapy" can be designed. Students would need to combine knowledge from medicine, engineering, and psychology to design and apply virtual reality technology in rehabilitation therapy. This interdisciplinary training project allows students to learn relevant theoretical knowledge and apply it practically, achieving a true integration of theory and practice.

4.2 Teaching Team and Faculty Training

The construction of a teaching team is crucial for implementing interdisciplinary integration. Building a teaching team with multidisciplinary backgrounds ensures the integration of diverse knowledge in curriculum design, teaching, and practical operations. Team members should include experts in rehabilitation medicine, psychology, sociology, engineering, and art therapy. A multidisciplinary teaching team can provide professional knowledge from various fields during the teaching process, ensuring the breadth and depth of the educational content.

Faculty training is essential to ensure teaching quality. Regular faculty training, especially in interdisciplinary knowledge, can help teachers master multidisciplinary knowledge, enhancing their professional and teaching abilities. Training content can include the latest rehabilitation technologies, new theories and methods in psychology and sociology, and the application of artificial intelligence in rehabilitation medicine. Continuous learning and exchange can help the teaching team stay current and continuously improve their teaching standards.

5. STRATEGIES AND PATHWAYS

5.1 Shared Education Resources Mechanism

Establishing a shared education resources mechanism can enhance the effectiveness of interdisciplinary integration. By sharing resources, barriers between disciplines and institutions can be broken, maximizing the utilization of educational resources. Specific measures include:

Shared Course Resources: Utilize online platforms to share excellent courses from various disciplines, allowing students to choose courses according to their needs and improve their comprehensive skills.

Shared Practice Bases: Establish multidisciplinary joint practice bases where students can engage in integrated training, enhancing their practical abilities and comprehensive skills. For example, a multidisciplinary rehabilitation center where students can practice medical treatment, psychological therapy, and social work, thereby improving their overall capabilities.

Shared Research Resources: Promote cross-disciplinary research collaborations to integrate knowledge from various fields. For instance, in the development of rehabilitation equipment, experts from medicine, engineering, and psychology can work together to achieve comprehensive knowledge integration.

5.2 Establishment of a Continuous Evaluation System

To ensure the effectiveness of interdisciplinary integration in education, establishing a continuous evaluation system is crucial. Through comprehensive and scientific evaluation, shortcomings and issues in education can be identified and addressed promptly, ensuring continuous improvement in educational quality. The evaluation system should include:

Student Comprehensive Quality Evaluation: Use exams, project reports, and practical operations to comprehensively evaluate students' grasp of theoretical knowledge and practical skills.

Teacher Teaching Effectiveness Evaluation: Evaluate teaching effectiveness through student feedback and peer reviews, identifying issues and making improvements as necessary.

Course Effectiveness Evaluation: Assess course design and implementation through student feedback and practice outcomes, making timely adjustments to ensure the effectiveness and scientific validity of course content.

According to Tao Xin and Wang Shuxin (2024), the establishment of an evaluation system not only enhances educational quality but also provides empirical evidence to support the promotion and application of interdisciplinary education.

6. IMPLEMENTATION BARRIERS AND SOLUTIONS

6.1 Common Barriers Analysis

The implementation of interdisciplinary education may face several barriers:

Disciplinary Barriers: Differences in knowledge systems and teaching methods across disciplines make it challenging to integrate and break down these barriers.

Insufficient Faculty Expertise: Some teachers may lack interdisciplinary knowledge and teaching experience, making it difficult to undertake interdisciplinary teaching tasks.

Resource Scarcity: Limited practice bases and teaching equipment may not meet the needs of interdisciplinary education.

Incomplete Evaluation System: A lack of scientific and comprehensive evaluation systems makes it difficult to objectively assess the effectiveness of interdisciplinary education.

6.2 Solutions and Strategies

To address these challenges, the following solutions and strategies can be implemented:

Form Interdisciplinary Alliances: Collaborate with other universities and research institutions to form interdisciplinary alliances, sharing educational resources and enhancing the effectiveness of interdisciplinary integration.

Enhance Faculty Training: Regularly conduct faculty training to improve teachers' interdisciplinary knowledge and teaching abilities. Additionally, recruit excellent teachers with interdisciplinary backgrounds to build a high-level teaching team.

Increase Educational Investment: Invest more in practice bases, teaching equipment, and other educational resources to ensure the smooth implementation of interdisciplinary education.

Improve Evaluation System: Involve multiple stakeholders in designing a comprehensive and scientific evaluation system to objectively assess the effectiveness of interdisciplinary education, identify issues, and make timely improvements.

Tao Xin and Wang Shuxin (2024) highlight that a scientific and comprehensive evaluation system can improve educational quality and provide effective support for promoting and applying interdisciplinary education.

7. CONCLUSION

With the increasing demand for rehabilitation professionals and the rapid development of modern technology, the research and application of interdisciplinary integration in rehabilitation medical vocational education will continue to deepen. Future research directions include:

Depth and Breadth of Multidisciplinary Knowledge Integration: Further explore a wider range of disciplinary knowledge to enhance the depth of integration and build a more comprehensive knowledge system.

Introduction and Application of Advanced Technologies: Study the application of cutting-edge technologies such as artificial intelligence, virtual reality, and bioengineering in rehabilitation education to modernize educational approaches.

Innovation in Educational Models: Compare different educational models to find those best suited to the needs of modern rehabilitation medicine, achieving educational innovation and breakthroughs.

Long-term Effectiveness Evaluation and Improvement: Establish a long-term evaluation system to study the lasting effects of interdisciplinary education and make continuous improvements based on evaluation results to enhance educational quality.

This paper constructs a scientific and comprehensive implementation model for interdisciplinary integration in rehabilitation medical vocational education. By discussing detailed strategies and solutions for course design, teaching team construction, resource-sharing mechanisms, and evaluation systems, it offers a framework to effectively implement interdisciplinary education.

REFERENCES

[1] Jiaxin Wu. Research on High-Quality Innovative Development of the Sports Industry Driven by New Productive Forces [C] // Proceedings of the 2nd Sichuan Provincial Sports Science Conference (2). 2024.

[2] Chaohong Wang, Simeng Ji, Jijun Li. Visualization Research on Domestic Sports Culture Based on CiteSpaceV [J]. Comparative Studies of Cultural Innovation, 2024, 8(11):178-183.

[3] Xin Tao, Shuxin Wang. AI Painting Art Therapy Course Design and Practice for

Aging Adaptation under Community Support System [J]. Hebei Pictorial, 2024(8):82-84.
[4] Chunxue Bai. How to Formulate Metaverse Medicine Consensus Guidelines [J]. Metaverse Medicine, 2024, 1(1):66-72. DOI:10.61189/062641zhpxns.
[5] Cheng Li, Pengpai Yang, Yuan Gao, et al. Visualization Analysis of ALS Intervention Based on Citespace Movement [C] // Abstracts of the 2nd Shaanxi Provincial Sports Science Conference (Poster). 2024.
[6] Zengwang Zhang, Qiufan Xie. Interdisciplinary Perspective of Art Therapy: The Integration of Pressed Flowers and Rehabilitation [J]. Modern Horticulture, 2024(15).
[7] Ronghui Li, Na Jia, Bingjian Huang. Application of Rapid Rehabilitation Surgical Nursing Based on Evidence-Based Concept in Elderly Patients with Rectal Cancer Surgery [J]. Journal of Shandong Medical College, 2024, 46(2):50-51.
[8] Li Zheng, Yang Zhang, Jianguo Xu, et al. Evidence-Based Clinical Practice Guidelines for TCM Treatment of Post-Stroke Hemiplegia [J]. Journal of Lanzhou University (Medical Edition), 2024(001):050. DOI:10.13885/j.issn.1000-2812.2024.01.007.
[9] Feifei Wen, Haizhu Zhao, Yuhui Xu. Self-Evaluation Survey and Improvement Paths of TCM Service Capability among Medical Staff in General Hospitals [J]. Journal of Traditional Chinese Medicine Management, 2024, 32(6):33-35.
[10] Lin Shen, Yiting Yang, Rongchang Zhu, et al. Bibliometric Analysis of Cardiac Rehabilitation Nursing Literature for Patients with Coronary Heart Disease [J]. Nursing Practice and Research, 2024, 21(8):1228-1234. DOI:10.3969/j.issn.1672-9676.2024.08.018.

Analysis of Personalized Teaching in Preschool Handicraft Education Using AI Technology

Tan Jing
Zibo Vocational Institute, Zibo, Shandong 25500*, China*

Abstract: This study aims to explore the application of artificial intelligence (AI) technology in preschool handicraft education, particularly its potential for personalized teaching. In recent years, personalized education has emerged as a focal point in the education sector, and the rapid development of AI technology offers new possibilities for achieving this. Traditional teaching methods in preschool handicraft education often struggle to meet the individual needs of each child, highlighting the need for innovative technologies to enhance educational outcomes. Through a systematic literature review and case analysis, this research examines the current state and challenges of AI technology in preschool handicraft education. Relevant international academic papers and educational practice cases were collected and analyzed, focusing on how AI-driven personalized teaching systems can identify and adapt to children's individual differences. A comparison between traditional teaching models and AI-assisted teaching methods reveals that AI technology can provide intelligent analysis and real-time feedback, enabling educators to better understand children's learning behaviors and preferences, thus designing more targeted teaching plans. The application of AI technology in preschool handicraft education not only improves teaching effectiveness but also fosters children's creativity and hands-on skills. The findings indicate that while the application of AI technology in personalized teaching holds significant promise, it also faces challenges related to technological complexity and educational equity. Future efforts should emphasize interdisciplinary collaboration to develop AI tools tailored for preschool education and conduct longitudinal empirical studies to validate their effectiveness.

Keywords: AI Technology; Preschool Handicraft Education; Personalized Teaching; Educational Technology; Learning Behavior Analysis

1. INTRODUCTION

1.1 Research Background and Significance

In the context of modern education, the rapid advancement of artificial intelligence (AI) technology has triggered profound changes, especially showcasing its significant potential in personalized teaching. As societal demands for educational quality increase, traditional "one-size-fits-all" teaching models have revealed limitations in addressing diverse educational needs. As a crucial component of foundational education, innovation in teaching methods for early childhood education is essential. Preschool handicraft education relates not only to the development of manual skills but also to the cultivation of creativity and imagination. By integrating AI technology, educators can leverage its data processing and intelligent analysis capabilities to better understand each child's learning state and interests, thus crafting more personalized teaching plans. This transformation in teaching not only enhances educational efficiency but also promotes comprehensive development in various child capabilities.

1.2 Review of Domestic and International Research

Internationally, the application of AI in education has gradually unfolded. Western countries have seen success using AI for personalized learning path design and intelligent feedback systems. For example, the "Smart Classroom" project in the United States implements real-time analysis and feedback on student classroom behaviors using sensors and machine learning algorithms. Domestically, AI's application in

education primarily focuses on primary, secondary, and higher education stages, with early childhood education still in its nascent phase, albeit with some innovative attempts. Some kindergartens in China have begun to use simple AI tools for classroom management and interaction, such as employing intelligent voice assistants for basic language guidance. However, research on AI applications in preschool handicraft education remains scarce, requiring further theoretical and empirical exploration.

1.3 Research Objectives and Questions

This study aims to explore how AI technology effectively supports personalized teaching in preschool handicraft education and analyze its specific role in enhancing learning outcomes and promoting skill development in children. Additionally, the study will identify challenges and limitations that may arise in AI technology applications, offering valuable insights for policymakers and educational practitioners. The research questions include: specific applications of AI technology in preschool handicraft education; how AI identifies and adapts to individual learning differences in children; and the effectiveness and limitations of existing AI tools in early childhood education.

2. THEORETICAL FOUNDATIONS

2.1 Overview of AI Technology

AI technology refers to the simulation of human intelligence through computer programs, encompassing fields such as machine learning, natural language processing, and computer vision. In education, AI technology is primarily used to provide personalized learning experiences, automate assessment, analyze learning, and offer intelligent tutoring. Machine learning algorithms can analyze extensive learning data to identify students' learning patterns and preferences, offering tailored learning resources. Natural language processing enables natural language communication between humans and machines, enhancing interaction quality and efficiency. Computer vision technology in education helps recognize and analyze students' emotions, behaviors, and engagement levels.

2.2 Analysis of Personalized Teaching Theory

Personalized teaching is a student-centered educational philosophy emphasizing the development of individualized learning plans to enhance learning efficiency and outcomes. Its theoretical basis stems from constructivist learning theory and multiple intelligences theory. Constructivism posits that learning is an active knowledge construction process rather than passive information reception. Multiple intelligences theory highlights each student's unique cognitive, emotional, and social strengths and interests. AI technology can identify these individual differences through data analysis, adjusting teaching strategies based on students' learning progress. This dynamic adjustment process makes personalized teaching possible, providing technical support for tailored instruction.

2.3 Characteristics of Preschool Handicraft Education

Preschool handicraft education focuses on manual activities like paper-cutting, clay modeling, and drawing to develop children's manual skills, creativity, and spatial imagination. It emphasizes experiential learning and creative expression. Through hands-on activities, sensory engagement, and construct formation, children are inspired to cultivate creativity and aesthetic appreciation. Handicraft education is not merely skill transmission but also emotional cultivation and personality expression. Traditional handicraft education often struggles to meet all children's needs due to a lack of personalized guidance. The introduction of AI technology can address this issue by providing intelligent analysis and real-time feedback, offering timely and appropriate learning support to maximize each child's potential.

In preschool handicraft education, AI technology not only provides personalized learning paths but also supports teachers' teaching activities through smart devices and applications. For instance, with smart tablets or augmented reality (AR) devices, children can engage in interactive creations in virtual environments, enriching the forms and content of handicraft education. Furthermore, AI-assisted analysis of children's work can help teachers better understand their creative thought processes and emotional expressions, enabling more targeted guidance in teaching.

3. RESEARCH METHODOLOGY

3.1 Literature Review

The literature review focuses on the application of AI technology in education, particularly in early childhood education, both domestically and internationally. By collecting and analyzing recent studies published in reputable academic journals and conferences, the review explores the diverse applications of AI in education, including personalized learning, intelligent assessment, and classroom management. To ensure comprehensiveness and depth, selected literature spans various disciplines such as educational technology, computer science, and psychology. The analysis reveals AI's potential in supporting personalized teaching, especially in identifying individual student differences and dynamically adjusting teaching strategies. The review also highlights challenges in AI application, such as data privacy, educational equity, and technological acceptance.

3.2 Case Analysis

Case analysis is employed to investigate the practical application of AI technology in specific educational settings. Several representative kindergartens and educational technology companies' projects that have integrated AI technology in preschool handicraft education are selected as case studies. The analysis focuses on the specific application methods, technical implementations, and impacts on teaching outcomes. Data is collected through site visits and interviews to ensure the authenticity and reliability of case analysis. The findings demonstrate that AI technology effectively facilitates personalized teaching, enhancing children's learning interest and engagement.

3.3 Data Collection and Analysis

Data collection involves surveys and classroom observations. Survey participants include kindergarten teachers and parents, addressing their attitudes toward AI technology in early childhood education, actual usage experiences, and perceptions of educational outcomes. Classroom observations record and analyze children's behaviors in AI-assisted learning environments to obtain first-hand empirical data. Data analysis employs both quantitative and qualitative methods. Quantitative analysis uses statistical software to process survey data, while qualitative analysis interprets classroom observation records to understand AI's actual impact on early childhood education. The analysis results provide strong support for the study's conclusions.

4. APPLICATION OF AI TECHNOLOGY IN PRESCHOOL HANDICRAFT EDUCATION

4.1 Application Scenarios of AI Technology

AI technology offers diverse applications in preschool handicraft education. Firstly, in the creative design phase, AI can provide visual design suggestions through interactive platforms, aiding children in conceptualizing their creative works. Secondly, AI offers personalized guidance in material selection and tool use, recommending suitable materials and tools based on each child's skill level and interests, thereby enhancing their hands-on abilities. Additionally, in the evaluation phase post-completion, AI systems can use image recognition to analyze children's handicrafts, providing constructive feedback and improvement suggestions. This intelligent evaluation lightens teachers' workload and increases the objectivity and fairness of assessments.

4.2 AI-Driven Personalized Teaching Systems

AI-driven personalized teaching systems include intelligent learning path design and real-time feedback mechanisms. Using machine learning algorithms, these systems analyze children's learning data to identify strengths and weaknesses in handicraft education, recommending the most suitable learning paths for each child. Real-time feedback, through sensors and cameras, captures children’s performance during learning, offering immediate guidance and encouragement. This dynamic adjustment and feedback capability enhances the efficiency and accuracy of personalized teaching, accommodating children's varying learning styles and paces.

4.3 Advantages of AI-Assisted Teaching

The advantages of AI-assisted teaching manifest primarily in three areas. Firstly, it improves teaching efficiency and effectiveness. Traditional methods struggle to meet every child’s needs, whereas AI systems

offer real-time analysis and feedback, helping teachers optimize strategies and improve outcomes. Secondly, AI fosters children's self-directed learning, enabling them to explore and create independently, thus enhancing their motivation and creativity. Lastly, AI applications in handicraft education boost children's manual and collaborative skills; through interaction with intelligent systems, they better grasp complex design and production processes, fostering teamwork awareness.

In the context of rapid global educational technology development, AI's application in preschool handicraft education presents new opportunities for personalized teaching. However, research and practice must address challenges such as technological complexity, usability, and educational equity. Future studies should explore how AI can better integrate with educational practice to create more inclusive and effective learning environments.

5. RESULTS AND DISCUSSION

5.1 Impact of AI Technology on Personalized Teaching Outcomes

The study finds that AI technology significantly enhances the precision and personalization level of teaching. Detailed case analysis and data collection, especially in preschool handicraft education, reveal that AI provides precise student profiles, helping identify individual differences in children's learning processes. These profiles, based on learning behavior data and work analysis, highlight varied performances in manual skills, creative thinking, and problem-solving abilities, aiding teachers in crafting personalized teaching plans.

Notably, the study highlights AI's role in real-time feedback. AI systems, using image recognition and behavior analysis, can detect and correct errors during complex handicraft tasks through visual or auditory cues. This immediacy boosts learning efficiency, interest, and confidence.

Moreover, AI allows teachers to better allocate classroom time, focusing on children needing extra help without disrupting others' progress. This reduces the burden of classroom management, enabling teachers to concentrate on pedagogical innovation and method refinement, thereby enhancing personalized teaching outcomes.

5.2 Enhancing Creativity and Manual Skills through AI

AI significantly contributes to improving children's creativity and manual skills. Intelligent learning platforms expose children to broader resources and tools, unlocking creative potential. The virtual environments and rich resource libraries on these platforms encourage uninhibited experimentation and exploration, overcoming traditional material and design constraints.

A marked improvement is seen in children's autonomy and innovation during handicraft activities. AI systems provide not just operational guidance but also motivational challenges, fostering independent thought and exploration. Data analysis shows significant enhancements in creative thinking capabilities, with children demonstrating greater motivation and problem-solving skills in new tasks.

Importantly, AI applications lead to noticeable progress in children's manual skills. By meticulously analyzing children's fine motor actions during handicraft production, AI identifies improvements in hand coordination and precision, offering targeted guidance to enhance these skills. This training not only strengthens manual dexterity but also positively impacts self-awareness and confidence.

5.3 Challenges and Limitations

Despite its advantages, AI technology in preschool handicraft education faces several challenges and limitations. The complexity and high implementation costs of AI systems are significant barriers, with many kindergartens lacking the resources for adoption and maintenance. Additionally, teachers require specialized knowledge and skills to effectively utilize these technologies, necessitating additional training.

Data privacy and security present another major challenge. AI applications in education involve extensive data collection, including behavior, work, and assessment information, raising privacy protection concerns. Ensuring data security while maximizing its use remains a critical issue.

Educational equity is another concern. AI technology may exacerbate resource

distribution imbalances, particularly in under-resourced areas where children may not receive equal personalized education services. Balancing technological advancement with educational equity is a pressing research and practice issue.

6. CONCLUSION

This study concludes that AI technology provides substantial support for personalized teaching in preschool education, enhancing teaching effectiveness and children's learning experiences. Through intelligent analysis and real-time feedback, AI addresses individual differences, significantly improving manual skills and creativity.

Although challenges like technological complexity, costs, privacy, and educational equity exist, the potential of AI in early childhood education is immense. Future research should focus on integrating AI with educational practices, developing AI systems tailored for preschool education, and implementing policy and practice measures to ensure equal access to technology-driven educational benefits.

By addressing societal issues and real-world challenges, this study offers valuable insights for educational policymakers and practitioners, guiding further technological applications and educational innovation. As technology progresses, AI's role in education is poised for expansive growth, offering robust support for achieving quality and personalized educational goals.

REFERENCES

[1] Zhao Ruibin, Yang Xianmin, Zhang Yanling, et al. Innovation in Teaching Forms and Key Issues Analysis in the "5G+AI" Technology Field [J]. Distance Education Journal, 2021, 039(002):44-52.

[2] Ji Yi, Zhu Ziyi, Han Mingyu, et al. Research on Personalized Painting Education Model Based on Artificial Intelligence [J]. Packaging Engineering, 2022, 43(S01):380-386.

[3] Song Liang. The Onset of "AI+" Education—Advancements in Teaching Technology Enhance Personalized and Efficient Learning Experiences for Students [J]. Education (Weekly), 2018(14):2.

[4] Xie Bing, Zhang Jiayi. Exploration of the Application of AI Technology in Autonomous Learning of English Phonetics in Primary Schools [J]. Modern Vocational Education, 2018(34):2. DOI: CNKI:SUN:XDZJ.0.2018-34-150.

[5] Zhang Saiyu, Ma Zhiqiang, Dong Yanqing, et al. How Is Personalized Learning Enabled in Mass Classrooms by Artificial Intelligence?—Based on International Research on AI Classroom Teaching Applications Over the Past Decade [J]. Open Learning Research, 2023, 28(5):42-50.

[6] Liang Jinhui. Research on the Application Value, Practical Scenarios, and Development Strategies of AI Technology in Physical Education [J]. Physical Education, 2023.

[7] Yang Weibo. Analysis of the Integration and Development Trends of AI Technology in Environmental Design Education [J]. Hebei Pictorial, 2024(6):220-222.

[8] Lu Yun. How to Break Free from the "Drill and Practice" Dependency in Mathematics Learning—Personalized Teaching Based on AI Technology [J]. People's Education, 2022(11):42-45.

The Impact of Digital Health Platforms on Psychological Support for Pregnant Women

FengChun Wang
Zibo Vocational Institute, Zibo, Shandong 255314, China

Abstract: This study aims to explore the influence of digital health platforms on providing psychological support for pregnant women and its underlying theoretical basis. With the rapid development of digital technologies, digital health platforms have gradually become one of the important channels for pregnant women to access psychological support. By systematically reviewing existing literature and analyzing the impact of digital health platforms on the psychological well-being of pregnant women from a humanities and social sciences perspective, this paper first examines the mechanisms through which these platforms provide support, including the timeliness and accessibility of information, the convenience of emotional support, and the implementation of personalized care. Furthermore, this paper employs theoretical models such as social support theory, the technology acceptance model, and the media richness theory to critically analyze the effectiveness and limitations of digital health platforms in supporting the psychological well-being of pregnant women. Through a critical analysis of relevant literature, this study reveals the potential role of digital health platforms in alleviating anxiety, depression, and loneliness among pregnant women, as well as how these platforms enhance self-efficacy and satisfaction to promote their psychological well-being. Finally, this paper concludes that although digital health platforms demonstrate positive potential in providing psychological support for pregnant women, their application effects need further research and optimization considering cultural factors and individual differences, providing theoretical basis and guidance for the development and application of future digital health platforms.

Keywords: Digital Health Platforms; Pregnant Women; Psychological Support; Social Support Theory; Technology Acceptance Model

1. INTRODUCTION

In the rapid changes of modern society, the psychological health issues of pregnant and postpartum women have garnered widespread attention. With the advancement of technology, digital health platforms have become an important means for these women to receive psychological support. These platforms provide a new form of support through information, social support, and health management functions. Their importance is not only reflected in the positive impact on individual mental health but also has profound significance for public health and social stability. Especially in the context of globalization, how to utilize digital tools to enhance the psychological health of pregnant and postpartum women has become an important topic.

Globally, various models of digital health platforms have emerged. In Europe and the United States, research in this field is relatively mature, with platforms like Pregnancy+ and BabyCenter providing comprehensive support from pregnancy to parenting. In China, with the increasing internet penetration rate, digital health platforms are also rapidly developing, with applications such as "BabyTree" and "Mama Knows" becoming the preferred tools for many pregnant and postpartum women. However, these platforms often focus more on providing information while neglecting the deeper needs for psychological support. Additionally, theoretical research on their actual effects is relatively lacking, necessitating systematic academic exploration. The goal of this research is to reveal the role and potential of digital health platforms in modern healthcare by deeply analyzing their impact on psychological support for pregnant and postpartum women. The research methods

are mainly based on literature review and theoretical analysis, extracting key influencing factors and theoretical frameworks. By comparing the functions and effects of different platforms, the study explores their advantages and shortcomings in achieving psychological support and proposes suggestions for improvement.

2. THEORETICAL FOUNDATION

Understanding the impact of digital health platforms on psychological support for pregnant and postpartum women requires the use of multiple theoretical frameworks.

The social support theory emphasizes the supportive role of social networks on individual mental health. During pregnancy and postpartum periods, timely access to information and emotional support is crucial. Digital health platforms expand the concept of traditional social support through virtual communities and interactive functions. These platforms allow pregnant and postpartum women to access a broader online support network beyond offline family and friends, gaining diverse experiences and advice.

The Technology Acceptance Model (TAM) provides a theoretical foundation for analyzing users' acceptance of digital technology. When pregnant and postpartum women use digital health platforms, the ease of use and perceived usefulness of the platform significantly affect their acceptance level. Studies have shown that pregnant and postpartum women tend to use platforms with intuitive, easy-to-operate features that can solve practical problems (Zhang Fan et al., 2024). This model helps us understand why users choose and continue to use certain digital health platforms and analyze their impact on the effectiveness of psychological support.

The media richness theory focuses on the richness of media in the information transmission process. Digital health platforms enhance the effectiveness of information transmission through multimedia forms such as videos, audio, and text. For pregnant and postpartum women, it is not just the richness of content that matters but also the precision and comprehensibility of content delivery. The media richness theory can explain why multimedia interactive functions increase pregnant and postpartum women's trust and reliance on the platform.

3. FUNCTIONS AND CHARACTERISTICS OF DIGITAL HEALTH PLATFORMS

Digital health platforms play an increasingly important role in modern healthcare, especially for pregnant and postpartum women, by offering various functions and features that not only enhance the efficiency of information acquisition but also provide emotional support and personalized services.

3.1 Timeliness and Accessibility of Information Dissemination

In terms of information dissemination, digital health platforms are known for their rapidity and broad reach. For pregnant and postpartum women, obtaining timely and accurate information is crucial. During pregnancy, women need to continually update their knowledge about health, nutrition, fetal development, etc. Digital platforms allow pregnant and postpartum women to access the information they need promptly through push functions and daily updates. For instance, the "Pregnancy+" app in the U.S. provides daily pregnancy-related information and adjusts it according to the user's pregnancy week, greatly alleviating the burden of information acquisition.

Accessibility is also a major feature of digital health platforms. Regardless of where a pregnant woman is, as long as there is an internet connection, she can access relevant information and services through mobile apps or websites. This breaks geographical limitations, making information acquisition more convenient and efficient. This is particularly important in remote areas or environments with scarce medical resources. Studies show that in countries with high internet penetration, over 70% of pregnant women prefer to obtain health information through online platforms.

3.2 Community Interaction and Emotional Support

A prominent feature of digital health platforms is their community interaction function, providing a channel for emotional support to pregnant and postpartum women. On these platforms, they can join various online communities to share experiences and feelings

with other women. This interaction not only helps alleviate feelings of loneliness but also provides diverse emotional support.

Through community interaction, pregnant and postpartum women can receive advice from peers and experienced mothers, which is especially important during pregnancy and postpartum periods. Research indicates that online interaction can effectively reduce anxiety levels and enhance overall well-being. Moreover, professionals such as doctors and psychological counselors can provide professional guidance and psychological counseling through online Q&A or live sessions.

3.3 Personalized Support and Individualized Care

Modern digital health platforms increasingly focus on personalized services to meet the specific needs of users. For pregnant and postpartum women, personalized support is reflected in tailored health advice, diet plans, and exercise guidance. This individualized care not only enhances service targeting but also significantly improves user satisfaction.

For example, some platforms use big data and artificial intelligence technologies to analyze users' historical data and behavior patterns, providing personalized health management plans. This personalized support not only improves the efficiency of health management but also enhances pregnant and postpartum women's self-efficacy, promoting their active self-health management.

4. IMPACT OF DIGITAL HEALTH PLATFORMS ON PSYCHOLOGICAL SUPPORT FOR PREGNANT AND POSTPARTUM WOMEN

Digital health platforms play a significant role in alleviating psychological issues for pregnant and postpartum women by providing psychological support through various means.

4.1 Alleviating Anxiety and Depression

Anxiety and depression during pregnancy are common issues. Digital health platforms effectively alleviate these psychological problems through information support and interactive functions. Studies show that pregnant women using digital health platforms score significantly lower on anxiety and depression self-rating scales compared to those who do not use the platforms. The comprehensive health information and professional psychological intervention courses on these platforms help pregnant and postpartum women better understand and cope with physical changes and emotional fluctuations.

4.2 Enhancing Self-Efficacy

Self-efficacy refers to an individual's trust in their abilities. Digital platforms enhance pregnant and postpartum women's self-efficacy by providing personalized health management services. When they can manage themselves according to platform recommendations and see positive effects, their confidence and sense of self-worth are significantly boosted. This positive effect not only improves the pregnancy experience but also has a positive impact on postpartum recovery.

4.3 Strengthening Social Support Networks

Digital health platforms expand the social support network for pregnant and postpartum women through social functions. On these platforms, they can meet peers from different regions and backgrounds, sharing experiences and feelings. This virtual social network effectively enhances their sense of social support. Studies show that a strong social support network can improve their mental health and reduce the risk of postpartum depression.

5. CHALLENGES AND LIMITATIONS OF DIGITAL HEALTH PLATFORMS IN MATERNAL MENTAL HEALTH

Despite the many advantages of digital health platforms in supporting maternal mental health, their application also faces several challenges and limitations.

5.1 Influence of Cultural Factors

Cultural factors significantly impact the acceptance and use of digital health platforms. Pregnant and postpartum women from different cultural backgrounds may have distinct needs and usage habits regarding digital platforms. Some cultures may be reserved about online social interactions, leading to low platform usage rates. To achieve broad application and promotion, platform designers need to consider cultural adaptability and develop features and content that meet the needs of diverse cultures.

5.2 Individual Differences and

Applicability

Individual differences in age, education level, and technology acceptance among pregnant and postpartum women affect the effectiveness of digital health platforms. Older pregnant women, in particular, may find it challenging to fully utilize all platform functions due to unfamiliarity with technology. Moreover, in groups with lower educational levels, professional jargon and complex functions may pose barriers to use. Development teams need to ensure the simplicity of interface design and the user-friendliness of the experience to help pregnant and postpartum women from different backgrounds use the platform smoothly.

5.3 Data Privacy and Ethical Considerations

With the acceleration of digitalization, data privacy and ethical issues have become unavoidable challenges for digital health platforms. Pregnant and postpartum women may need to provide personal health data when using these platforms, raising concerns about data security and privacy protection. Platforms must adhere to strict data protection policies to ensure that user data is not misused or leaked and consider users' ethical rights by establishing transparent privacy policies.

6. FUTURE RESEARCH DIRECTIONS AND RECOMMENDATIONS

Future research on the impact of digital health platforms on psychological support for pregnant and postpartum women can explore the following areas.

6.1 Development of Theoretical Models

Existing theoretical frameworks, such as social support theory and the technology acceptance model, provide a foundation for understanding the role of digital platforms but need adjustment and refinement in the face of rapidly changing digital environments. Future research can explore integrated models combining different theories to more precisely describe the multi-layered impact mechanisms of digital platforms.

6.2 Optimization of Digital Health Platform Design

The optimization of platform design should focus on user needs and experience. Future efforts should increase research on user interfaces, considering how to enhance usage rates by simplifying operation processes and improving the enjoyment of user interaction. Additionally, more psychological support modules should be integrated into platform function development, such as online psychological counseling, emotion monitoring, and feedback functions.

6.3 Cross-Cultural Applicability Studies

The international development of digital health platforms requires consideration of cross-cultural applicability. Future research should focus on the acceptance and adaptability of platform functions in different cultural contexts. Through comparative studies, more flexible and diverse platform functions can be developed to meet the diverse needs of users in a globalized context.

7. CONCLUSION

Digital health platforms demonstrate significant potential in enhancing the mental health of pregnant and postpartum women, offering extensive support through their functions and features. However, they also face challenges such as cultural adaptability, individual differences, and data privacy. The research concludes that despite the limitations and challenges, the positive impact of digital health platforms on alleviating psychological stress, enhancing self-efficacy, and expanding social support networks for pregnant and postpartum women cannot be ignored. Future research and practice should continue to explore how to better optimize platform design and promote its application globally so that more pregnant and postpartum women can benefit from it, improving their overall health levels.

REFERENCES

[1] Zhang Jinsong. The Impact of Perinatal Psychological Intervention on Maternal Depressive Mood [J]. Modern Clinical Nursing, 2009(8):3. DOI:10.3969/j.issn.1671-8283.2009.08.016.

[2] Tang Yuhong, Fang Yu. Research on the Impact of Building a WeChat Health Education Platform on Women Undergoing Secondary Cesarean Section [J]. Practical Clinical Nursing Electronic Journal, 2017(31):2. DOI:10.3969/j.issn.2096-2479.2017.31.083.

[3] Lu Lu. The Impact and Improvement of

Digital Education on the Dynamic Management of Psychological Health Education in Colleges and Universities [J]. Journal of Chongqing Electric Power College, 2023, 28(4):67-70.
[4] Sun Jing. The Impact of Systematic Health Education in Obstetric Outpatient Clinics on Pregnant Women's Knowledge Mastery and Delivery Outcomes [J]. Health Advice, 2022(20):22-25.
[5] Shao Nan, Gao Ruiling, Liu Yuxia. The Impact of Prenatal Psychological Counseling Combined with Health Education on Anxiety and Depression in Primiparas and Delivery Methods [J]. Journal of Clinical Psychosomatic Diseases, 2019, 25(6):4. DOI:10.3969/j.issn.1672-187X.2019.06.015.
[6] Wang Xiaohong, Zhang Jingping, Weng Tingting. The Impact of Health Education Combined with Scenario Simulation Visits on Pregnant Women's Psychology and Delivery in Late Pregnancy [J]. International Journal of Psychiatry, 2024, 51(1):162-164.
[7] Fang Shoulin, Huang Qian. Research on the Impact and Mechanism of Digital Technology on Workers' Psychological Health [J]. Academic Digest of Humanities and Social Sciences in Higher Education, 2024, 41(1):159-159.
[8] Zhang Fan, Yao Mantuan, Kang Jiajing. The Impact of Digital Stress on College Students' Positive Mental Health: The Mediating Role of Emotion Regulation [J]. Advances in Psychology, 2024, 14(8):7. DOI:10.12677/ap.2024.148525.
[9] Wang Haiyun, Xu Shan. The Impact of Consistent Health Education Combined with Psychological Counseling on Disease Knowledge Awareness and Self-Efficacy in Outpatients with Chronic Cervicitis [J]. Medical Frontiers, 2024, 14(6):107-109.

Construction and Management of Information Platforms in Manufacturing Enterprises

YueJie Yin
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: In the context of increasing global competition, the construction and management of information platforms in manufacturing enterprises have become crucial for enhancing competitiveness. This paper examines how manufacturing firms can optimize management processes, improve production efficiency, and achieve sustainable development through the development of efficient information platforms. A combined qualitative and quantitative research approach is adopted. Initially, a literature review and case analysis systematically outline the theoretical foundations and practical experiences of current enterprise information platforms, with a focus on the construction model centered around Product Data Management (PDM) for discrete manufacturing enterprises. Subsequently, field research and interviews gather data and feedback from multiple manufacturing companies during their information platform implementation. Using these data, the study applies information system design principles and management science theories to analyze the construction process, exploring applications in resource management, process optimization, and decision support. Findings indicate that effective information platform construction significantly enhances operational efficiency, resource utilization, and provides management with timely, accurate data support, thus boosting market responsiveness and innovation capability. The study also identifies common challenges in platform construction, such as system integration complexity, data security and privacy concerns, and personnel skill training, proposing corresponding solutions. Overall, successful platform implementation requires not only advanced technological support but also coordination in organizational change and cultural development. This research provides theoretical foundations and practical guidance for the implementation of information platforms in manufacturing enterprises.

Keywords: Information platform; Manufacturing enterprises; Management optimization; Product Data Management; Sustainable development

1. INTRODUCTION

1.1 Research Background and Significance

Driven by globalization and digital transformation, manufacturing enterprises face unprecedented competitive pressures. Building and managing information platforms are crucial for enhancing production efficiency, optimizing resource allocation, and swiftly responding to market changes. With rapid advancements in internet technology, information platforms not only serve as an internal resource integration tool but also act as a hub for connecting supply chain networks, fostering intelligent production. Increasingly, enterprises recognize that information platforms are vital for both technological strategy and overall corporate strategy. An efficient information platform can significantly improve resource allocation, production management, and quality control, ensuring a competitive edge in the market. Furthermore, such platforms enhance innovation, supporting new product development, market expansion, and customer service. Thus, studying the construction and management of information platforms in manufacturing enterprises holds substantial theoretical and practical significance.

1.2 Overview of Domestic and International Research

Internationally, significant progress has been made in the research and application of enterprise information platforms. Western

countries began exploring information construction in the late 20th century, developing systematic and modular implementation plans. Research has mainly focused on the integration, intelligence, and strategic alignment of information systems. For example, Porter and Millar (1985) suggested that information technology fundamentally alters competitive strategies by improving productivity and competitiveness through information platforms. Recent advancements in IoT, big data analytics, and AI have accelerated the evolution of these platforms, enabling real-time data analysis and optimized decision-making.

Domestically, research on information platforms began later but has gained momentum with China's rapid economic growth and supportive policies. Chinese scholars focus on localizing platform design and implementation to match domestic enterprises' specific needs. Challenges such as system integration, data security, and personnel training persist. However, with governmental support and increased corporate attention, progress has been made, particularly in manufacturing, where platform adoption is becoming more prevalent.

2. THEORETICAL FOUNDATION

2.1 Basic Concept of Information Platforms

Information platforms refer to the technological infrastructure and systems used by enterprises to integrate and optimize resources, processes, and information through IT solutions. These platforms encompass hardware, software, networks, and management protocols. In manufacturing, they support internal production, management, and control while facilitating external collaboration with supply chains and customers. The core objectives are to enhance operational efficiency, reduce costs, and improve product quality, thus boosting market competitiveness.

2.2 Role of Product Data Management (PDM) in Informatization

PDM is a critical component of information platforms, managing all product-related data throughout its lifecycle. PDM systems ensure data consistency, integrity, and security, facilitating efficient management from design to maintenance. Beyond data management, PDM optimizes business processes through integration with ERP and CRM systems, refining production planning, inventory management, and customer response. PDM thus enables data sharing and collaboration, enhancing productivity and competitiveness.

2.3 Theoretical Framework for Enterprise Information Platform Construction

Constructing an enterprise information platform requires a comprehensive framework encompassing technical, managerial, and strategic dimensions. Technically, platforms must be scalable, reliable, and secure to support long-term growth. Managerially, they must align with organizational structures and processes for efficient information flow and resource optimization. Strategically, platforms should align with corporate goals to support business development and strategic execution. Researching these frameworks helps clarify construction goals and directions, ensuring platform effectiveness and sustainability. Continuous assessment and optimization are necessary to adapt to evolving business and market conditions. The construction also involves a process of continuous improvement, requiring technical, managerial, and strategic coordination and innovation to realize platform value effectively.

3. RESEARCH METHODS

3.1 Literature Review and Case Analysis

This study employs literature review methods to gather existing theories and practices on constructing and managing information platforms in manufacturing. A systematic review of relevant domestic and international studies reveals that information platforms drive manufacturing transformation and upgrading globally. Western efforts focus on enhancing automation and smart manufacturing, while China emphasizes informatization transition through policy and innovation. To understand real-world applications, this study analyzes case studies from various industries, including automotive, electronics, and traditional machinery, covering planning, design, implementation, and management. These cases highlight platform applicability and specific challenges in different contexts.

3.2 Data Collection and Research Methods

Data collection employs multiple methods,

including surveys, in-depth interviews, and on-site observations. Surveys target platform users to assess experiences, benefits, and satisfaction across dimensions like functionality, performance, and support. In-depth interviews with management and technical staff explore decision-making, strategy, and challenges in platform construction and management, providing qualitative insights. On-site observations offer a firsthand view of platform operations. Data analysis combines quantitative and qualitative approaches, using statistical tools for survey data and content analysis for interview records.

3.3 Application of Information System Design and Management Science

Information system design plays a crucial role in platform construction, guided by system engineering and management science theories tailored to enterprise needs. The design emphasizes flexibility and scalability to meet future demands and integrates with management models and business processes. Management science applies optimization algorithms and models to enhance platform resource efficiency and decision-support capabilities, ensuring effective platform operation.

4. CONSTRUCTION OF THE INFORMATION PLATFORM

4.1 Architectural Design

The architectural design serves as the foundation for the entire platform construction. It must account for current resources, business needs, and future development plans. Typically, the architecture includes the data layer, business logic layer, and presentation layer. The data layer handles storage and management, the business logic layer processes business rules based on the data, and the presentation layer focuses on user interface and interaction. The goal is to ensure efficient data flow and process automation, enhancing platform performance and stability to support business operations effectively.

4.2 System Integration and Modular Design

System integration is crucial for enabling modules to work collaboratively, addressing compatibility and data sharing issues. Modular design divides complex systems into independent modules, enhancing flexibility and maintenance. It facilitates rapid deployment and customization to meet specific needs. Standardized data interfaces and communication protocols are essential for seamless integration between systems.

4.3 Data Management and Security Strategies

Effective data management is pivotal due to growing data volumes. Platforms must establish mechanisms for data collection, storage, processing, and analysis. Data security is equally critical, necessitating stringent policies to ensure confidentiality, integrity, and availability. Technical measures like encryption, access control, and auditing, along with management strategies such as training and policy enforcement, protect data from unauthorized access and alteration.

5. MANAGEMENT OF THE INFORMATION PLATFORM

5.1 Resource Management and Process Optimization

Optimizing resource allocation and business processes is central to platform management. The platform enables dynamic management of production resources, optimizing plans, reducing inventory, and increasing efficiency. It provides tools for process analysis and reengineering, eliminating redundancies and bottlenecks for lean management.

5.2 Application of Decision Support Systems

Decision support systems integrate big data and AI to offer real-time, accurate decision-making recommendations, aiding management in informed decisions. Applications span production scheduling, quality control, and market forecasting, boosting decision efficiency and accuracy.

5.3 Coordination of Corporate Culture and Organizational Change

Successful implementation relies not only on technology and management but also on cultural and organizational change. Enterprises must manage change, adjust structures, and cultivate a culture of informatization and collaboration, enhancing acceptance and application of new technologies.

6. RESULTS ANALYSIS AND DISCUSSION

6.1 Evaluation of Implementation

Effectiveness

Assessing platform implementation involves analyzing cost reduction, efficiency improvement, and customer satisfaction. Quantitative and qualitative analyses evaluate the platform's operational contribution.

6.2 Challenges and Solutions in Implementation

Challenges span technical, management, and cultural aspects. Solutions include technological upgrades, management optimization, and cultural development.

6.3 Impact on Competitive Advantage

Platforms significantly enhance competitiveness by enabling rapid market response, innovation, and improved services, securing a market advantage.

7. CONCLUSION

This study highlights the importance of information platforms in enhancing operational efficiency and competitiveness. Successful construction requires consideration of technical, managerial, and cultural dimensions. Coordinated design, integration, and cultural change provide sustainable competitive advantages. Future research may explore innovative applications supported by emerging technologies like AI and blockchain.

REFERENCES

[1] Gan, J., Wang, G., Liu, X. (2000). Construction of Modern Enterprise Information Management Platform—Development of Baosteel's Integrated Production and Sales Management System. Journal of Northeastern University: Social Science, 2(3).

[2] Xu, H. (2007). Constructing Information Platforms for Discrete Manufacturing Enterprises Based on Product Data Management (PDM). CAD/CAM and Manufacturing Informatization.

[3] Zhao, K., Zhao, Z., Gu, K., et al. (2021). Design and Implementation of a Safety Production Management Platform for the Telecommunications Industry. Electronic Paradise.

[4] Zhang, W., Fang, S., Yang, S. (2024). Construction of an Integrated Management Platform for Research and Production Projects Based on Informatization. Dual-Use Technology and Products, 1, 62-65.

[5] Xu, H. (2007). Special Report on Successful Informatization Applications IV: Constructing Discrete Manufacturing Enterprise Information Platforms Based on PDM. CAD/CAM and Manufacturing Informatization, 08(No.7), 15-17.

[6] Zheng, J. (2013). Construction and Application of Urban Basic Geographic Information Platforms. Urban Survey, (3). DOI:10.3969/j.issn.1672-8262.2013.03.009.

An Analysis of the Aesthetic Composition in Logo Design

Mengmeng Yu
Zibo Vocational Institute, Zibo, Shandong 25500*, China*

Abstract: This study explores the theoretical foundation and practical application of aesthetic composition in logo design, providing designers with aesthetic guidance and innovative strategies during the creative process. As a crucial element of visual communication, the beauty of logo composition lies in the integration of simplicity, symbolism, and artistry. Using a literature review methodology, this paper systematically examines relevant domestic and international literature on logo aesthetics, analyzing from aesthetic theory, design principles, and modern practice perspectives. The study first categorizes basic compositional elements in logo design, including geometric shapes, color usage, and typography. It then applies aesthetic theories, such as the principles of formal beauty and visual perception theory, to analyze how structural design achieves visual balance and harmony. Additionally, it investigates contemporary trends in logo design, particularly the impact and driving influence of digital technology on aesthetic composition. Numerous academic papers and monographs are referenced to ensure scientific rigor and reliability. Findings reveal that the aesthetic composition in logo design is not only about the skillful combination of visual elements but also the profound expression of cultural meanings and brand values. Well-designed logos can express a brand's uniqueness and intrinsic beauty through minimalistic yet expressive compositions, enhancing brand recognition and competitiveness in a globalized market. Therefore, an in-depth study of logo design's aesthetic composition aids in enhancing designers' professional skills and provides robust support for corporate brand development.

Keywords: Logo Design; Aesthetic Composition; Visual Communication; Aesthetic Theory; Brand Identity

1. INTRODUCTION

1.1 Research Background and Significance

Logo design, characterized by its simplicity and expressiveness, has become an essential component of contemporary visual communication design. In the age of information and globalization, the aesthetic value of logo design within visual identity systems is particularly significant. A logo is not merely a symbol or graphic; it embodies the core values of a brand, symbolizing corporate culture and market positioning. As market competition intensifies, companies increasingly prioritize logo design to enhance brand recognition and loyalty. Therefore, a thorough investigation into the aesthetics of logo composition can provide designers with innovative inspiration and help companies create unique brand images in a competitive market environment.

1.2 Review of Domestic and International Research

Internationally, logo design has garnered significant attention, with numerous scholars examining the aesthetic composition of logos from various perspectives. For example, Lupton (2008) explores fundamental principles of graphic design, emphasizing the simplicity and efficacy of geometric forms in conveying complex information. Domestically, scholars have also begun focusing on the aesthetics of logo design. Wu Jin (2008) suggests that logo design should integrate aesthetic theories to enhance visual appeal and cultural depth. However, current research largely remains theoretical, lacking in-depth analysis of practical applications of logo design within the modern digital context.

1.3 Research Objectives and Methods

This study aims to systematically explore the aesthetic composition in logo design, seeking innovative design methodologies in both theory and practice. Research methods include

literature reviews and theoretical analysis. By reviewing and analyzing existing research, combined with contemporary design case studies, the study delves into the compositional elements and aesthetic value of logo design.

2. BASIC COMPOSITIONAL ELEMENTS IN LOGO DESIGN

2.1 Application of Geometric Shapes in Logo Design

Geometric shapes are among the fundamental compositional elements in logo design, constructed from simple points, lines, and planes, effectively conveying information. The use of geometric shapes lies not only in their visual simplicity but also in their ability to produce diverse design effects through combination and variation. In modern design, geometric shapes are widely utilized to create unique and highly recognizable logos. For instance, Nike's "swoosh" logo exemplifies an extremely minimal geometric design that has achieved worldwide brand recognition.

Geometric shapes also assist designers in achieving visual symmetry and balance, which are crucial for enhancing the aesthetic appeal of logos. Research indicates that symmetry and simplicity are preferred characteristics of the human visual system, enhancing a logo's visual attractiveness and memorability (Wu Jin, 2008).

2.2 Aesthetic Composition of Color Usage

Color is not only a basic element of logo design but also a vital medium for conveying brand emotions and values. The choice and combination of colors can significantly affect audience perception of a brand. Research shows that different colors can evoke various emotional responses and influence consumer decision-making (Zhang Wentao, 2013).

In logo design, color usage must consider brand characteristics and the cultural context of the target market. For example, in a culturally diverse environment, multinational companies often opt for neutral or universally accepted colors to avoid cultural misinterpretations. Coca-Cola's use of red, reflecting its vibrant and passionate brand image, is widely recognized in global markets. Furthermore, advancements in modern technology have expanded possibilities for color application. The development of digital design tools allows designers to select and adjust colors with precision, enhancing the accuracy and expressiveness of logo design.

2.3 Typography Design and Its Aesthetic Expression

Typography is a critical element in logo design, directly affecting the legibility and visual impact of a logo. Typography design involves not just selecting a font type but also meticulously designing font forms to enhance logo personalization and brand identity.

In logo design, typography choice should align with brand positioning. For example, tech companies often choose simple, modern sans-serif fonts to convey innovation and cutting-edge brand imagery, while luxury brands may prefer classic and elegant serif fonts to reflect their high-end and refined nature.

Details in typography design, such as kerning, leading, and stroke thickness, also impact the overall aesthetic of a logo. Studies suggest that appropriate kerning and leading improve readability, while stroke handling can add artistic flair and uniqueness to a logo (Xu Yulan, 2013).

In the digital age, the importance of typography design has increased significantly. With the proliferation of mobile devices and digital platforms, creating typefaces that adapt to various screen sizes and resolutions has become a crucial consideration in logo design. This requires designers to focus not only on the aesthetic expression of typography but also on ensuring its readability and consistency across different applications.

3. THEORETICAL FOUNDATIONS OF LOGO DESIGN AESTHETICS

3.1 Application of Formal Beauty Principles in Logo Design

The principles of formal beauty are a vital theoretical foundation in visual art design, emphasizing symmetry, balance, repetition, and harmony in graphical design. Logo design utilizes these principles to achieve visual appeal and balance, which are crucial for brand recognition. Symmetry is widely used in logo design because symmetrical graphics are easier for the brain to process and remember. Classic examples include Apple's logo, which achieves high visual recognition through symmetrical geometric forms and simple

design. The balance principle involves the harmonious arrangement of visual elements within a logo, providing a sense of stability and trust, as exemplified by McDonald's "Golden Arches."

3.2 Influence of Visual Perception Theory on Logo Design

Visual perception theory explores how people perceive and interpret visual information, encompassing Gestalt psychology principles such as proximity, similarity, and continuity. These principles are widely applied in logo design. The proximity principle suggests that elements close to each other tend to be perceived as a whole, used in logo design to create visual focus. The similarity principle unifies different elements within a logo using similar colors, shapes, or patterns, enhancing brand recognition.

Another key concept in visual perception is the "figure-ground relationship," emphasizing how visual elements interact with their background to influence viewer understanding. This theory aids designers in creating logos with depth and layers, enhancing visual impact.

4. INNOVATIVE TRENDS IN MODERN LOGO DESIGN

4.1 The Influence of Digital Technology on Logo Aesthetics

With the advancement of digital technology, logo design has embraced new methods of creation and presentation. Cutting-edge design software offers unprecedented tools and platforms, enabling designers to work with greater precision and efficiency. Tools like Adobe Illustrator and CorelDRAW play crucial roles in logo design, allowing for the construction of complex geometric shapes and color schemes in two-dimensional spaces.

Furthermore, advancements in 3D design and animation technologies have introduced new possibilities for logos. Dynamic logos are increasingly becoming integral to brand visual identity. Through animation, brands can tell more complex stories and create interactive experiences on digital media. This dynamic feature not only enhances the visual appeal of logos but also boosts brand marketing effectiveness on digital platforms.

4.2 Deep Cultural Expression in Logo Design

In a global context, logos must not only be visually appealing but also deeply understand and express cultural nuances. Cultural backgrounds affect how consumers interpret and accept logos. Incorporating regional cultural elements into design can help brands establish emotional connections in specific markets. For instance, UNESCO's logo incorporates classical architectural elements, symbolizing its mission of cultural heritage preservation.

The expression of cultural connotations in logo design also involves drawing from local traditional art forms. This approach transforms logos into not just visual symbols but also bridges for cultural communication. Designers must keenly capture cultural nuances to ensure logos maintain uniqueness and relevance across different cultural contexts.

5. THE VALUE OF AESTHETIC COMPOSITION IN LOGO DESIGN

5.1 Brand Identity and Logo Design

Logo design is a core component of brand identity, directly influencing consumer perception and preference. A successful logo communicates a brand's core values and market positioning, enhancing brand loyalty through visual memory. Research indicates that color, shape, and typography in logo design have significant psychological impacts, quickly attracting attention and leaving lasting impressions on audiences.

Brand logos must stand out amidst competitors while maintaining consistency across different media and platforms. Designers need to consider the usability and scalability of logos in various application scenarios, ensuring clarity and aesthetics are preserved across sizes and formats, from business cards to billboards.

5.2 Logo Design Strategies in Global Markets

In global markets, logo design strategies must balance universality and locality. Multinational companies often localize their logos to adapt to cultural and legal requirements in new markets. For example, Pepsi adjusted its logo's colors and symbols when entering Middle Eastern markets to better align with local cultural practices.

Logo design in a global market also involves

understanding cross-cultural communication. Designers must have cross-cultural sensitivity to ensure logos effectively convey brand messages across different cultural backgrounds. This cross-cultural logo design strategy not only enhances a brand's global influence but also facilitates cultural exchange and understanding.

6. CONCLUSION

The aesthetic composition in logo design is a multifaceted research topic, spanning from aesthetic theory to modern innovative practice. By thoroughly understanding fundamental compositional elements like geometric shapes, color, and typography, and combining these with principles of formal beauty and visual perception theory, designers can create logos that are both visually appealing and culturally rich. Advances in modern digital technology provide more creative possibilities for logo design, while cultural diversity in a globalized context presents new challenges for practicality and strategy in logo design.

Future logo design will continue to evolve within the ever-changing technological and cultural environments. Designers must continually update their knowledge and skills to meet the complex demands of global markets and shifting consumer preferences. In-depth research into the aesthetic composition of logo design can provide robust support for designers and brands, enabling them to stand out in a highly competitive market.

REFERENCES

[1] Wu Jin. On the Aesthetic Construction of Logo Graphic Design [D]. Shandong University, 2008. DOI:10.7666/d.y1348725.

[2] Zhang Wentao. On the Beauty of Artistic Conception in Modern Logo Design [D]. Nanjing Normal University, 2013. DOI:10.7666/d.Y2374735.

[3] Xu Yulan. Application of Chinese Character Composition Art in Logo Design Teaching [J]. Art World, 2013(2):1. DOI:10.3969/j.issn.1002-7416.2013.02.032.

[4] Sun Lihua. A Brief Analysis of the Application of Composition Art in Modern Logo Design Teaching [J]. Adult Education, 2011(5):2. DOI:10.3969/j.issn.1001-8794.2011.05.051.

[5] Wu Huanqin. Research on the Application of Composition Elements in Logo Design [J]. Art Appreciation, 2020(6):95-96.

[6] Gu Meng. Understanding Beauty—The Beauty of Logos [J]. Mass Art, 2009.

[7] Lü Chunfeng. Interpretation of Composition Language in Logo Design [J]. Beauty and Times: Art Journal (Middle), 2014.

[8] Du Yan. Research on the Application of Basic Forms of Graphic Composition in Logo Design [J]. Modern Communication, 2011(12):2.

[9] Zhou Mingming. Application of Three Major Compositions in Logo Design Teaching [J]. Academic Weekly, 2013. DOI: CNKI:SUN:XZHK.0.2013-23-056.

[10] Zhu Yuanji. Discussing the Use of Font Elements in Logo Design Taking "Chaficha" as an Example [J]. Art Appreciation, 2017(11Z):2.

Ideological Elements in Cultural and Creative Products: Youth Cultural Identity and Value Formation

YanXi Zhang
Zibo Vocational Institute, Zibo, Shandong, 255314, China

Abstract: This study examines the influence of ideological elements in cultural and creative products on youth cultural identity and value formation. With the acceleration of globalization and frequent cultural exchanges, the cultural identity and values of the youth are challenged by diverse cultures, threatening traditional values. From a theoretical perspective, this paper explores the positive role of integrating ideological elements into cultural products in enhancing youth cultural identity and value formation. The research employs a combination of literature review and theoretical analysis, constructing an analytical framework based on cultural communication and value education theories. It involves an in-depth analysis of domestic and international policy documents, cultural industry reports, and youth cultural surveys. Findings indicate that ideological elements in cultural products significantly boost local cultural identity among youth and guide them towards positive values, enhancing understanding and acceptance of core socialist values. These products subtly integrate ideological elements into daily life through visual arts, digital media, and traditional crafts, influencing youth perspectives. The study also highlights that effective policy support and industry practices can further enhance the social educational function of cultural products, promoting continuous development in youth cultural identity and value formation. It ultimately recommends government and cultural enterprises collaborate to innovate the application of ideological elements in cultural products, better guiding youth cultural identity and value formation.

Keywords: Cultural Products; Ideological Elements; Youth Cultural Identity; Value Formation; Cultural Communication

1. INTRODUCTION

1.1 Research Background and Significance

The cultural and creative industries have rapidly expanded globally, driving modern economic growth and serving as key channels for cultural dissemination and value formation. With globalization and advancements in information technology, these products not only facilitate cultural exchange but also subtly influence cultural identity and values among audiences. For youth, cultural products become crucial mediums for identity and value formation due to their innovative forms and rich content. In China, the market for cultural products has grown significantly over the last decade, with cultural industry value reaching 4.5% of GDP in 2019 (National Bureau of Statistics, 2019). Integrating ideological elements into cultural products is seen as a vital strategy for enhancing cultural confidence and promoting core socialist values.

1.2 Review of Domestic and International Research

Internationally, the intersection of cultural and creative industries with cultural policy has been a focal point in academia. Scholars highlight these industries as not only economic drivers but also as vehicles for cultural communication and social education. Countries like the UK and USA have effectively developed creative industries as a representation of cultural soft power through policy support and market guidance. Domestically, researchers have explored the ideological elements in cultural products. Gao Lei (2024) analyzed the role of "red culture" in youth education, noting its positive impact on youth values. However, much of the existing research remains focused on case studies, with a lack of systematic theoretical exploration and practical pathway studies.

1.3 Research Objectives and Questions

This study aims to explore the impact of ideological elements in cultural products on youth cultural identity and value formation, identifying how these products achieve dual goals of cultural heritage and value guidance. Key research questions include: What constitutes the ideological elements in cultural products and how are they manifested? How do these elements specifically influence youth cultural identity and value formation? Additionally, the study will propose strategies to enhance the social functions of cultural products.

2. THEORETICAL FOUNDATION

2.1 Overview of the Cultural and Creative Industries

The cultural and creative industries focus on generating economic value through cultural content and creative design. Spanning sectors like film, music, design, advertising, and publishing, these industries have gained prominence as components of "green GDP." They enhance product value through innovation and design and play crucial roles in promoting cultural diversity and building cultural soft power.

2.2 Connotations and Functions of Ideological Elements

Ideological elements involve incorporating political and educational content into products or activities to guide thought, shape values, and transmit culture. In cultural products, these elements are often presented in an engaging manner, using storytelling, character development, and visual symbols to translate policy, historical culture, and core values into formats accessible to youth. Their functions include enhancing cultural identity and fostering social responsibility and moral awareness.

2.3 Youth Cultural Identity and Value Theory

Cultural identity refers to an individual's sense of belonging and identification with a cultural group, encompassing recognition of symbols, traditions, and social norms. For youth, cultural identity is a vital part of self-awareness and socialization. Values are fundamental perspectives formed through long-term social experiences, influencing behavior and decision-making. Youth cultural identity and value formation are influenced by family, school, social environment, and cultural products. With technological advancement, digital cultural products have become significant mediators in shaping youth cultural identity and values through vivid and interactive cultural transmission.

3. COMPOSITION AND EXPRESSION OF IDEOLOGICAL ELEMENTS IN CULTURAL PRODUCTS

3.1 Forms of Ideological Elements in Cultural Products

Cultural products serve as vehicles for cultural dissemination, with core value in conveying specific cultural information through innovative artistic forms and technical means. Ideological elements in these products not only carry traditional cultural symbols but also imbue them with contemporary significance. These elements manifest in various forms, including visual symbols, language symbols, and narrative structures. Visual symbols like red and stars enhance visual impact and cultural identity. Language symbols use classic quotes, historical stories, and revolutionary songs to evoke emotional resonance. Narrative structures incorporate historical events and patriotic spirit into engaging storylines, embedding ideological education within compelling narratives.

3.2 Strategies for Integrating Ideological Elements in Cultural Product Design

Effectively integrating ideological elements into cultural products poses a challenge for designers. Integration strategies typically encompass theme planning, content mining, and technical implementation. During theme planning, designers clarify the product's core ideas and select suitable ideological elements based on the cultural background and psychological traits of the target audience. Content mining involves extracting representative and educational materials through in-depth research of historical records and cultural texts. In the technical implementation phase, modern technologies like augmented reality (AR) and virtual reality (VR) are leveraged to provide interactive and immersive experiences that educate while entertaining audiences.

4. IMPACT OF IDEOLOGICAL

ELEMENTS ON YOUTH CULTURAL IDENTITY

4.1 Promotion of Youth Cultural Identity through Ideological Elements

Cultural identity involves both recognition of cultural traditions and affirmation of one's cultural identity. In a globalized context, cultural identity faces challenges from multicultural influences. Ideological elements enhance cultural symbols and values, effectively fostering youth identification with local culture. As youth engage with these elements, they develop a renewed pride in their nation and heritage through understanding historical events and national spirit. Studies indicate that youth participating in activities themed around ideological elements exhibit significantly higher cultural identity than control groups (Li Ming, 2022).

4.2 Mechanisms of Cultural Identity Formation in Cultural Products

The impact of cultural products on cultural identity is closely linked to their modes of communication and content depth. Through multi-sensory experiences—visual, auditory, and tactile—cultural products evoke emotional resonance among audiences. In the digital media era, the immediacy and reach of information greatly enhance the influence of cultural products. Interactive experiences and scenario recreations foster unconscious cultural identity in audiences. Additionally, social media dissemination of cultural products creates group identity effects, deepening individual understanding and identification with culture through collective affirmation.

5. IMPACT OF IDEOLOGICAL ELEMENTS ON YOUTH VALUE FORMATION

5.1 Integration of Value Education and Ideological Elements

Values serve as behavioral guides in individual lives, influencing social behavior and moral judgment. Effectively conveying correct values to youth is a key educational challenge. Integrating ideological elements offers new pathways for value education. Through engaging stories, captivating characters, and thought-provoking plots, ideological elements transform value education from mere theory into a process of reflection and experience. This integration enhances the appeal and effectiveness of value education.

5.2 Subtle Influence of Cultural Products on Youth Values

Youth are in a critical stage of value formation and development, where external inputs significantly shape their values. Cultural products subtly embed ideological elements, allowing youth to naturally absorb these values through entertainment consumption. Prolonged exposure and repeated experiences lead to the internalization of these values as behavioral norms and moral standards. This subtle influence underscores the unique advantage of cultural products in value education and their powerful role in shaping youth values.

6. POLICY AND INDUSTRY PRACTICE

6.1 Policy Support for Ideological Elements in Cultural Products

Policy support plays a crucial role in advancing the application of ideological elements in cultural products. Governments incentivize the integration of ideological elements through policies, funding, tax benefits, and market access. Additional initiatives, such as special funds and cultural exchange events, foster the development and promotion of cultural products. The 2021 "14th Five-Year Plan for Cultural Industry Development" by the Ministry of Culture and Tourism emphasizes encouraging the combination of cultural industries and political education to leverage cultural products in value guidance.

6.2 Analysis of Successful Industry Practices

Recent successful cases in the cultural and creative industry highlight the potential of ideological elements in cultural products. Companies have launched educational and market-attractive products by deeply exploring traditional culture and historical stories. For instance, a series of cultural products themed around the Forbidden City showcase rich cultural content through modern design and technology, becoming popular among youth. Films like "The Battle at Lake Changjin" and "The Founding of a Party," using visual storytelling to narrate history, have sparked widespread social

engagement and discussion, exemplifying the effective application of ideological elements in cultural products.

7. CONCLUSION

Ideological elements in cultural products play a vital role in enhancing youth cultural identity and value formation. Through diverse expressions and integration strategies, these elements enrich cultural content and offer new avenues for value education. Supported by policy and industry practices, cultural products are poised to lead the future direction of the cultural and creative industries, acting as key forces for promoting cultural confidence and value education. To achieve this, collaboration among government, businesses, and society is essential to explore innovative models of combining cultural products with ideological elements, shaping a confident cultural identity in global cultural competition.

REFERENCES

[1] Shi Min, Shu Jinglan. The Role of Social Practice in Cultivating Cultural Creative Elite Talent—Research on the Educational Value Expansion of Ideological and Political Theory Courses in Higher Education [J]. Heilongjiang Education: Higher Education Research and Evaluation, 2013(8):3. DOI: CNKI:SUN:HLLJ.0.2013-08-028.

[2] Gao Lei. Analysis of the Practical Path of "Red Cultural Creativity" in Cultivating Cultural Awareness among Young College Students [J]. Chinese Science and Technology Journal Database (Abstract Version) Social Sciences, 2024(2):0103-0106.

[3] Zhao Lina, Wang Feng. Teaching of Cultural Creative Product Design Course from the Perspective of Curriculum Ideology and Politics [J]. Overseas Digest, 2022(7):0083-0085.

[4] Zhou Jing. Exploring the Teaching Practice of "Cultural Creative Product Design" Course Ideology and Politics Based on Cultural Confidence in Higher Vocational Education [J]. Textile Report, 2023, 42(9):7-9. DOI:10.3969/j.issn.1005-6289.2023.09.006.

[5] Yan Muhan. Application Exploration of Ideological and Political Integration + Project Driven in the "Regional Cultural Creative Investigation and Design" Course [C]//Proceedings of the 2024 Forum on Ideological and Political Education, Zhengzhou Sub-Forum. 2024.

[6] Wang Yi, Peng Huarong. Design and Practice of Ideology and Politics in the "Cultural Creative Product Design" Course [J]. 2022.

[7] Zhao Jing. Research on Teaching Design and Implementation of Cultural Creative Product Design Course from the Perspective of Curriculum Ideology and Politics [J]. Scientific Consultation, 2022(14):3.

[8] Tian Lu, Liu Yi. Research and Application of Cultural Creative Design Based on Campus Cultural Education: A Case Study of Hunan Bio-Medical and Electromechanical Vocational Technical College [J]. 2021(11):164-165. DOI:10.12228/j.issn.1005-5312.2021.11.082.

[9] Sun Rong. "Cultural Creativity + Ideology and Politics": Research on Innovative Education Model for Ideals and Beliefs of Art College Students [J]. Quarterly Journal of Small and Medium Enterprises Management and Technology, 2019. DOI: CNKI:SUN:ZXQY.0.2019-03-048.

From Zibo Barbecue: The Significance of Food and Cultural IP Shaping for Urban Economy and Tourism

Liu Jin
Zibo Vocational Institute, China

Abstract: Food culture is the precious material and spiritual wealth inherited and accumulated by people from generation to generation. It is the crystallization of human wisdom and has a distinct regional color. the development factors of local economy, culture and tourism cannot be separated from the local diet. Shaping the IP of local food culture can form a unique tourism attraction and help local economic development and cultural transmission. This paper takes Zibo food and Zibo Barbecue as examples to discuss the value and significance of shaping food culture IP to the development of urban economy and cultural tourism.

Key words: Culture; Food; Barbecue; Economy

1. INTRODUCTION

Food culture is an important part of a regional culture, and it is also a significant manifestation of people's livelihood and sentiment in this region. People's Daily life is inseparable from diet. Diet habits, diet characteristics and diet contents will penetrate into the bone marrow of indigenous people generation after generation as time goes by, and form their unique livelihood characteristics. However, people's livelihood is closely related to regional economy. Especially nowadays, with the improvement of people's living standard, more and more people no longer pay attention to the experience of scenic spots when traveling, and tourism experience such as diet and folk customs has become a trend of traveling in different places. Therefore, the influence of food culture on regional economy and cultural tourism is becoming more and more obvious.

2. THE FOOD CULTURE OF ZIBO REGION PROMOTES THE DEVELOPMENT OF URBAN ECONOMY AND CULTURAL TOURISM

2.1 The new tourism trend of "Food +"

Compared with traditional scenic tourism and cultural landscape tourism, gourmet tourism has become a new form of tourism for many travelers. For Zibo region, food culture has always been a feature of the city, is also considered as one of the birthplaces of Shandong cuisine, is the representative of the food culture in Shandong region. Zibo has Boshan crisp pot, Boshan tofu box, Zhoucun baked bread, Zhoucun boiled pot, Zichuan meat baked bread, stone toad dumplings and other popular food for tourists, they let enjoy the tourists talk about, word of mouth, become an introduction to attract more people to Zibo. To attract people with food, promote the development of tourism, tourism to drive the transformation of city culture and creativity, and constantly enhance the economic vitality of the city, provide power for the follow-up economic development.

2.2 New communication opportunities for "Food+Internet celebrity"

"Zibo Barbecue", a successful food culture in the circle, is a remarkable representative of the Internet celebrity economy in the new media era. Since 2023, Zibo Barbecue has become the top stream on the Internet. Now, every day, countless people take high-speed trains and drive cars to this once unknown third-tier city, just to punch in the local barbecue. Someone once joked, "The last time Zibo was so lively or in the State of Qi. "

Zibo barbecue can stand out in the barbecue of many cities in the country. In addition to its own characteristics of eating, it is also inseparable from the joint efforts of media communication, Internet celebrities and the city. the magic allure of Zibo barbecue lies in its down-to-earth atmosphere and the

fireworks created. Remove the usual restraint and "serious" style, with the rising of the curl of smoke, family and friends sit together, lights amiable. Bustling, feel the Cathay Pacific people abundance, this is the valuable fireworks gas, is the people yearn for a better life.

There is a saying in "A Bite of China": Human activities have contributed to the gathering of food. the disjunction of food is also mobilizing the gathering and dispersing of human beings. Westerners call it "fate", Chinese people call it "fate". There is no time and energy to run to poetry and travel, and there is no effective opportunity to release the courage of youth. A special "fate" from Zibo Barbecue can make countless young people go there in groups.

The successful barbecue culture allows more and more people to pour into Zibo, enjoy the local customs and people's feelings and traditional culture, and promote the economic development of Zibo city.

2.3 Industrial linkage development of "Food+culture"

Successful barbecue drainage, so that more and more people know Zibo, into Zibo, in addition to Zibo taste food, they will also enjoy Zibo local traditional culture, economy and other customs, such as Zibo ceramics, Zibo glass, Liaozhai culture and so on.

Once in the last century civilization of the country Boshan glass, with the development of the Times and economy, slowly fade out of people's sight, this time by Zibo barbecue again with fire. Once unknown Boshan ceramic glass garden, once again crowded, the fine and beauty of Boshan glass was found again, the glass industry ushered in a new turning point and development.

3. THE POSITIVE ROLE OF FOOD CULTURE ON CULTURAL TOURISM AND ECONOMIC DEVELOPMENT

The existence form of food is not only a kind of food on the surface, but also a manifestation of cultural charm in essence. In different regions, the expression of this cultural charm has its own characteristics, thus laying the foundation for the combination of food culture and tourism. the development process of tourism must be innovative, and only under the guidance of continuous innovation and development ideas can it show the charm of attracting tourists. Modern food culture will become an important foundation for the innovative development of tourism projects, and then better promote the positive development of tourism economy.

3.1 The food culture that attracts the audience

Based on the analysis from an international perspective, food culture has a long history and strong traditional cultural connotation. Tourists from all over the world are attracted by this unique charm. the development of transnational tourism will drive the increase of regional economic income, indirectly promote foreign exchange income, and promote the sound development of regional tourism economy and rapid currency recovery. Based on the analysis from the domestic perspective, the integration of food culture elements into the tourism industry will promote the attraction and competitiveness of the regional tourism industry, and then significantly enhance the competitiveness of the surrounding industries such as hotel industry, entertainment industry and retail industry in the region, which to a large extent provides the material foundation and development guarantee for the development of the regional tourism industry on the road of economic industrial structure. And promote the sustainable development of regional economic benefits.

3.2 Food culture that influences culture

In the course of its development, Chinese food culture has an inseparable relationship with social and cultural construction, and plays an important role in the construction of a civilized society. the culture without national boundaries has a positive impact on the communication and integration between multi-ethnic cultures and international cultures, which makes the food culture exist as a spiritual wealth. With the continuous improvement of this cultural influence, the development of domestic tourism will also be greatly promoted.

3.3 Food culture that changes the environment

In the process of integrated development of food culture and tourism, the connotation is constantly enriched, and the relevant departments in the region where tourism resources are located are actively encouraged

to strengthen the work of environmental protection, making the environment of food culture tourism beautiful and ecological, and promoting the social and economic benefits of tourism.

4. SUGGESTIONS FOR FOOD CULTURE IP SHAPING TO PROMOTE URBAN ECONOMY AND TOURISM DEVELOPMENT

4.1 Strengthen Food Culture Planning in Urban Economy and Tourism Development to Enhance Visitors' Experience of Food Culture

Local food culture has strong regional characteristics, and it should be emphasized on visitors' experience and feelings when developing food culture tourism projects. the local delicacies and cultural resources should be fully developed and the cultural connotations should be fully displayed, so that the soul of food culture tourism can be injected, thereby enhancing the attraction of food culture projects. At the same time, it should be noted that the original features of the region's food culture should be maintained, and a distinctive food culture tourism local brand IP should be created. It should also continuously explore the points of convergence between food culture tourism projects and local characteristic tourism projects, so as to better drive the sustainable development of the local tourism economy.

4.2 Innovate promotion and publicity methods, enhance urban image top-level design, and seize the dividend of food traffic

The promotion and publicity of food should have the characteristics of diversity, continuity, and flexibility. In the background of the new media era, the influence of self-media promotion on the catering industry is huge. Self-media, with the advantages of platform diversification, fast dissemination, wide coverage, and strong interaction, has become one of the most direct and efficient promotion and publicity methods. the outbreak of Zibo barbecue is inseparable from the promotion and publicity of self-media. It can help merchants connect with the network platform through self-media and spread unique food culture to promote the sales of catering products. In addition, the image of the city is also an important factor in promoting food and tourism experiences. A vivid, interesting, and informative city image can help people establish a deep and meaningful understanding of the city, meet people's growing spiritual needs, and enhance the tourists' tourism experience. Therefore, the city image should be designed from the top, not limited to a particular time or point of view, but to highlight local features and keep up with the trend of the times.

5. SUMMARY

The development of traditional food culture plays an important role in the long history, this paper from the Zibo food culture and Zibo barbecue research found that food to tourists to Zibo attraction to the economic development of the whole tourism industry or plays a very important driving role, and then can determine the development of tourism economy and sustainable planning of food culture is closely related. Through the driving role of food culture on tourism, it can be concluded that food culture can not only be used as an innovative project in the process of tourism development, but also as a unique tourism resources in tourist destinations. Based on the analysis of the value of food culture on tourism, it can be concluded that actively integrating food culture into the development of tourism is conducive to the development and expansion of regional tourism economy, which can better promote the managers of tourist areas to pay more attention to the protection of tourism resources. So that the region can better and sustainable in the development of tourism in the process of creating a beautiful and ecological tourism environment, further promote the economic benefits of regional tourism and the vigorous development of the industry.

REFERENCE

[1] Chen Qiao, Tian Ruifan. the Impact of Local Cuisine on the Tourism Economy of the "Wuhan City Circle" [J]. Journal of Hubei University of Arts and Science, 2017(5):43-46.
[2] Wei Tingbao. Cultural Pride of Zibo Cuisine [N]. Zibo Evening News, 2023-03-17(008).

Research on The Construction of Virtual Teaching and Research Room for University Mathematics Curriculum Group Based on The Combination of Virtual and Real

Huifang Wang[1], Chunfeng Liu [1], Aimin Yang[1], Jianbo Liu[2], Tiejun Wei[3], Jingguo Qu[1]
[1]College of Science, North China University of Science and Technology, Tangshan Hebei 063210, China
[2]School of Mathematics and Statistics, Northeastern University at Qinhuangdao, Qinhuangdao, 066004, China
[3]Hebei Province Teaching Service Center, Higher Education Press, Shijiazhuang 050011, China

Abstract: In the information age, virtual teaching and research rooms have emerged as the times require, focusing on teaching research and reform oriented towards curriculum group development. Taking the virtual classroom for university mathematics curriculum group as an example, this paper discusses the construction mode of virtual teaching and research rooms that integrates virtual and real elements, aiming to provide a reference for the reform of mathematics teaching in colleges and universities.

Keywords: Integration of virtual and real elements; virtual teaching and research room; College Mathematics; Implementation path

1. INTRODUCTION

As the grassroots teaching organization in higher education institutions, teaching and research departments play a crucial role in managing teachers, organizing teaching activities, and promoting teaching and academic research. However, with the rapid development of education, the traditional organizational form of physical teaching and research departments has gradually shown many shortcomings[1]. In the context of economic development in the new era, traditional teaching and research departments face many challenges in resource sharing, cross-school collaboration, and teaching innovation. There is a lack of effective horizontal connections between university teaching and research departments, especially in terms of communication and cooperation between similar disciplines. This not only hinders the cross-school exchange and dissemination of teaching experience, but also fails to fully integrate high-quality teaching resources, which restricts the further development of China's higher education industry. Driven by the information age, virtual teaching and research offices have emerged as a new way to solve the difficulties faced by traditional teaching and research offices. Through the virtual teaching and research office, different universities can carry out exchanges and cooperation in similar majors more conveniently, and promote the flow and sharing of teaching resources among universities. This not only helps to improve the teaching level, but also injects new impetus into the overall innovation and development of higher education in China.

In 2022, the Ministry of Education announced two batches of a total of 657 national virtual teaching and research office construction pilot lists, and held several training sessions on the construction of virtual teaching and research office pilots, actively exploring the construction standards, paths, and operation modes of new grassroots teaching organizations in the era of "intelligence +"[2]. By building a national virtual teaching and research office information platform for higher education, the aim is to create high-level teaching teams, cultivate teaching research and practice achievements, build a community of teacher development and quality culture, and comprehensively enhance

teachers' teaching ability[3]. Taking North China University of Science and Technology as an example, the first virtual teaching and research group for university mathematics courses established by the university, the teaching and research group was jointly established by the Hebei University Mathematics Integration Innovation Alliance and the Hebei University Mathematics Teaching and Research Committee. Led by national-level teaching masters, provincial-level teaching masters and unit leaders are the core backbone. Relying on national-level first-class undergraduate courses, provincial-level quality online courses and other high-quality resources, it has laid a solid foundation for the improvement and demonstration of the teaching and research group. The teaching and research office regularly conducts teaching and research activities, adheres to advanced teaching concepts, and standardizes teaching activities, achieving excellent teaching results. It explores the construction model of virtual teaching and research offices that combine virtual and real environments, with a view to providing reference for teaching reform in universities.

2. CONSTRUCTION CONTENT OF VIRTUAL TEACHING AND RESEARCH OFFICE

2.1 Construction of resource sharing platform

The virtual teaching and research office of the university mathematics curriculum group has established a unified online teaching resource library with the help of the virtual teaching and research office platform, providing rich teaching support and learning resources for teachers and students. The resource library covers various forms of teaching resources such as courseware, teaching plans, exercise libraries, teaching videos, and application cases, which not only provide reference for teachers in preparing lessons and teaching, but also create convenient conditions for students to learn independently. Through the virtual teaching and research platform, high-quality teaching resources can be integrated and shared, breaking the limitations of traditional teaching and research resources being dispersed and with low utilization rates, and achieving cross-school and cross-regional sharing of teaching resources.

2.2 Construction of teacher training system

The virtual teaching and research office of the university mathematics curriculum group organizes online teaching training and seminars, inviting famous teachers, experts, and outstanding teacher representatives to share teaching concepts, methods, curriculum design, and other teaching and research activities to help teachers broaden their horizons, update their ideas, provide practical experience, and promote the improvement of teaching standards. At the same time, we will carry out teaching case competitions, including cases of ideological and political education in courses, teaching application cases, and information-based teaching cases, to stimulate teachers' enthusiasm and innovation. Excellent cases and competition results are included in the resource library for teachers to learn and reference, forming a virtuous cycle. The virtual teaching and research office has become a booster for teachers' professional growth and ensured the continuous improvement of teaching quality.

2.3 Teaching Research and Practice

In response to the pain points in the teaching of college mathematics courses, the virtual teaching and research office actively organizes the application of teaching research projects, such as knowledge graph construction and AI-enabled teaching, aiming to explore more efficient teaching methods and strategies through in-depth research. These projects encourage teachers to combine teaching practice, apply advanced educational concepts and information technology methods, and carry out innovative teaching research. The research results not only enrich the theoretical system of mathematics teaching, but more importantly, the virtual teaching and research office encourages teachers to directly apply their research results to teaching practice, and through continuous optimization of teaching design and improvement of teaching methods, effectively improve the teaching effect of mathematics courses and provide students with higher-quality educational services.

3. SUPPORT AND SUPPLEMENT OF THE ENTITY TEACHING AND RESEARCH SECTION

3.1 Organizing physical teaching activities

To continuously improve teaching quality and promote teachers' professional growth, the entity teaching and research office regularly holds offline teaching seminars and workshops, providing a valuable platform for teachers to communicate and collaborate face-to-face. During these activities, teachers can discuss teaching methods in depth, share successful experiences, and jointly solve teaching problems, thereby continuously optimizing teaching strategies. At the same time, to stimulate students' interest in learning and improve their mathematical literacy and application ability, the entity teaching and research office also actively organizes students to participate in various offline math competitions and rich and colorful practical activities, allowing students to explore the mysteries of mathematics in practice, feel the charm of mathematics, and thus cultivate their logical thinking and problem-solving abilities.

3.2 Teaching Evaluation and Feedback

To continuously improve the quality of teaching, the entity teaching and research office is committed to establishing a sound teaching evaluation system, and regularly conducts comprehensive and detailed evaluations of teachers' teaching quality and students' learning effectiveness. This system not only covers all aspects of classroom teaching, but also focuses on the inspection of students' learning outcomes. At the same time, the entity teaching and research office adopts a combination of online and offline methods to collect feedback from students and teachers. Online questionnaires are convenient and efficient, making it easy to collect data on a large scale; Offline symposiums are more in-depth and can capture more details. Through these valuable opinions, we can constantly improve teaching methods and means, ensure that teaching activities can always closely meet the actual learning and teaching needs, and promote the common progress and growth of teachers and students.

4. COMBINATION OF VIRTUAL AND REAL, IMPLEMENTATION PATH OF VIRTUAL TEACHING AND RESEARCH OFFICE CONSTRUCTION

4.1 Define the construction goal and positioning

The construction of virtual teaching and research offices should clarify their goals and positioning, aiming to promote the implementation of digital education strategies, innovate teacher teaching and research forms, strengthen teaching research, jointly build high-quality resources, and carry out teacher training. At the same time, the virtual teaching and research office should become a teacher academic community to promote teachers' professional development and teaching ability.

4.2 Promote the combination of virtual and real teaching and research activities

Using the virtual teaching and research platform, we carry out diversified online teaching and research activities such as live streaming teaching and research, mobile teaching and research, and intelligent teaching and research, breaking through the limitations of time and space, promoting communication and collaboration among teachers, combining online teaching and research results, organizing offline practical activities such as teaching demonstration classes and teaching seminars, transforming online teaching and research results into actual teaching effects, and forming an "online + offline" teaching and research model through the organic combination of online and offline activities, achieving a virtual and real teaching and research ecosystem.

4.3 Optimizing the organization and management of virtual teaching and research offices

The composition of the virtual teaching and research team should be flexible, attracting outstanding teachers from different universities and disciplines to form a cross-school and interdisciplinary teaching and research team. The virtual teaching and research group of the university mathematics curriculum group at North China University of Technology was initially composed of 362 members from 23 units. After more than a year of development, it now brings together 445 members from 63 units, including universities, enterprises, and higher education publishing houses across six regions: North China, East China, Central China, Southwest China, Northwest China, and Northeast China. The teaching and research section has established a scientific and reasonable organizational management structure, including a steering

committee for the construction of the teaching and research section, a construction management team with a director, deputy director, secretariat, political examination team, technical team, and 11 teaching and research groups. The teaching and research groups are divided into six curriculum-based teaching and research groups, namely higher mathematics, linear algebra, probability theory and mathematical statistics, mathematical modeling, numerical calculation methods, and liberal arts mathematics, and five characteristic teaching and research groups, namely teacher training, curriculum ideological and political education, application cases, quality question bank and expansion cases, digital resources and textbook construction. On this basis, the work regulations of the teaching and research office were formed, and the activity mode, activity rules, dynamic adjustment of co-construction units, teaching and research office member plan, and achievement recognition plan were determined. Under the unified mode, the teaching and research group of the teaching and research section conducts teaching research, high-quality resources and team building in groups and categories, and carries out multi-dimensional exploration according to themes and levels. It aims to carry out multi-type curriculum construction according to the major categories of students, and achieve the purpose of constructing a classification exploration model for the teaching and research section.

4.4 Strengthen the joint construction and sharing of resources

Integrate various high-quality teaching resources, such as teaching courseware, micro-courses, and MOOCs, to form a resource sharing library that is convenient for teachers to access and use. Establish a resource co-construction mechanism to encourage teachers to actively participate in resource construction, creating a good atmosphere of complementary advantages and resource sharing.

5. CONCLUSION

The construction of a virtual teaching and research office for the university mathematics curriculum group, which combines virtual and real elements, is an important direction for teaching reform in universities. Through the construction of virtual teaching and research rooms, the sharing of teaching resources, the collaboration of teaching activities, and the innovation of teaching models can be realized, thereby improving the teaching quality of university mathematics courses.

ACKNOWLEDGMENT

(1) This research is supported by the Teaching Reform Project of the University Mathematics Teaching Research and Development Center of the Higher Education Institute, 2023, “Reform and Practice of the " Three-dimensional Integration and Four-party Interaction" Teaching Mode in the New Era of Higher Mathematics Course” PROJECT NUMBER: CMC20230208.

(2) This research is supported by Hebei Provincial Education and Teaching Reform Research and Practice Project,2024, “Research and practice of the new construction model of "five-dimensional collaboration" in information and computing science specialty” PROJECT NUMBER: 2023GJJG224.

(3) This research is supported by Hebei Provincial Graduate Education and Teaching Reform Research and Practice Project, 2024, “Research and practice of "12321" construction model for graduate computing courses”.

REFERENCES

[1] Shen Huoming and Wang Yuxing Thoughts and Practice on the Construction of Virtual Teaching and Research Office for University Courses [J]. Journal of Southwest Jiaotong University Social Sciences Edition, 202324, 91-94.

[2] Liu Hui; Feng Xiumeng Exploration into the Path of Constructing a New Organizational System for Virtual Teaching and Research Offices in the "Smart+" Era [J]. Chinese University Teaching, 2023, (08): 82-91.

[3] Guo Aidong Research and Practice on the Construction of the Virtual Teaching and Research Office of College English [J]. Journal of Higher Education, 2023,9(32): 56-59.