

Research and Practice on the Positive Influence of "Four Cultural Integration and Cultivation" Talent Cultivation Mode on Promoting Mental Health

Fengju Hu, Jixin Liu^{*}, Huiping Liu, Shufang Zhou, Cheng Zhen

School of Intelligent Manufacturing, Qingdao Huanghai University, Qingdao, Shandong, China

^{*}Corresponding Author.

Abstract:

The new round of scientific and technological revolution and industrial reform promote the transformation and upgrading of traditional industries, but also bring many challenges to the cultivation of applied talents. In the face of the changing social demand for talents, talent cultivation needs to focus on the core point of comprehensively improving quality, focusing on personality shaping and value guidance, and cultivating high-quality engineering and technical talents with good psychological quality, solid theoretical knowledge, strong practical ability and cognitive ability. Cultural cultivation is of great significance to the cultivation and development of talents and plays a very important role in promoting the development of all walks of life. Culture contains very important ideological and political elements and spiritual power, which can not only make talents form a sound personality, a good mentality, but also promote talents to form a positive thirst for knowledge, so as to achieve the purpose of promoting talent cultivation. Therefore, this paper proposes to study the promotion effect of cultural cultivation on mental health. In the process of applied talents cultivation, cultivation subject to engineering concept as the instruction, the traditional culture, red culture, craftsman culture and innovative culture into the talent cultivation practice, through absorbing the essence of culture, help people set up the correct values, with persistence optimistic psychological quality to motivate yourself, and with technical exercise habits, with innovation gain courage and confidence, Let cultural cultivation and mental health cultivation form a synergistic effect, in order to promote talents to have positive psychological quality. In this paper, non-parametric test was carried out to explore the promotion effect of "four cultural integration" talent cultivation mode on mental health through the detection rate of three years psychological evaluation. Through data analysis, there was a significant difference in the detection rate of three years psychological assessment ($p < 0.001$). The detection rate of psychological problems is the highest before cultural cultivation. In the practice of "four cultural integration cultivation" talent cultivation mode in applied colleges from the perspective of engineering cultivation, the detection rate of psychological problems decreases year by year, and the mental health level of talents has been significantly improved. The research and analysis show that the "four cultural integration" cultivation mode has established a strong psychological foundation for talents, played a key role in cultivating talents' excellent quality, and played

a decisive role in cultivating talents' professional quality.

Keywords: *Culture, Talent cultivation, Mental health.*

I. INTRODUCTION

Under the new normal, the industrial transformation and upgrading has set higher requirements for the talent cultivation quality. Applied colleges and universities should actively respond to the changes in the demand of talents, focus on the core point of how to improve the talent cultivation quality comprehensively, and establish an innovative and integrated engineering education concept which covers the complete period. The ideological and political education should be conducted throughout a high level of undergraduate education process in order to develop students' good psychological quality, stimulate students' learning interest and potential, and deepen the teaching reform. Moreover, the focus should be placed on how to improve students' ability in solving complex engineering problems, and students' engineering ethics awareness and professional ethics should also be strengthened. Finally, an engineering education system with Chinese characteristics is formed [1,2]. In the process of personnel training, Qingdao Huanghai University combines the engineering education concept, and integrates educational elements such as the traditional culture, the red culture, the craftsman culture, and the innovative culture. Through continuous exploration and practice, a talent cultivation mode characteristic of "Four cultural fusions" is gradually formed to cultivate the high-quality applied talents with good moral character, excellent psychological quality and solid professional quality.

II. ANALYSIS ON THE CHARACTERISTICS OF ENGINEERING EDUCATION

The basic concepts of engineering education focus on three aspects: student-centered, result-oriented and the continuous improvement of the teaching quality [3]. Firstly, students are centered. The main status of students is determined, the educational objectives and the curriculum design emphasize the cultivation of students' ability, and the teaching evaluation focuses on the improvement of students' learning effects, ability and quality. Secondly, results are oriented. It clearly illustrates the chain decision relationship from school positioning, training objectives, graduation requirements, curriculum system to resource allocation, aiming to provide an effective support for the talent cultivation. Thirdly, it is the continuous improvement of the teaching quality [4]. More attention should be paid to students' comprehensive ability and physical and mental quality, and the effective quality monitoring and continuous improvement mechanism should be established, which focuses on training objectives, graduation requirements and teaching links, so as to promote the continuous improvement of the talent cultivation quality. Engineering education adheres to the fundamental task of establishing morality and cultivating talents, and takes the future-oriented, changing and sustainable development as the construction concept. Moreover, it also chooses the main routes characteristic of inheritance and innovation, crossover and integration, coordination and mutual sharing in order to cultivate the compound and innovative engineering and technical talents [5].

III.CONNOTATIONS OF “FOUR CULTURAL” TALENT CULTIVATION

3.1 Educational Connotations of Traditional Culture

The fine traditional Chinese culture is bred and developed throughout more than 5,000 years of cultural development and historical accumulation. It contains such concepts as patriotism, the love for the people and moral integrity. It is a unique spiritual symbol as well as the “root” and “soul” of the Chinese nation. [6] When the fine traditional Chinese culture is rooted into the training process of engineering and technical talents, it is the need to strengthen the moral cultivation and cultivate talents. It is also an effective way to improve the character cultivation and build a sound personality. Besides, it is an effective carrier to improve the self-awareness and promote the mental health. [7] The fine traditional Chinese culture embodies the strong cultural confidence and emphasizes the shaping of the ideal personality. It not only requires the perfect physical and mental cultivation, but also requires a person to embrace dreams, ambitions and responsibility. While improving the ideological and moral realm, it helps students establish the correct values and become the qualified engineering and technical talents. [8] Therefore, the cultivation of engineering and technical talents needs to inherit the gene of the fine traditional Chinese culture and take it as the inner core spiritual pursuit.

3.2 Educational Connotations of Red Culture

Red culture is the advanced culture with Chinese characteristics, which is jointly created by the older generation of revolutionists with their lives and blood. It contains the profound meaning to constantly promote the social progress and the ideals and faiths of pursuing new changes. It also reflects the professional spirit to carry out the reform and innovations and forge ahead with determination. People are constantly motivated to forge ahead and strive. The firm ideals and faiths and the indomitable spirit have turned the spiritual strength into the individual affective commitment and behavioral habits. Students learn from the struggle of revolutionists the wisdom and strength to advance. Students not only inspire themselves with the psychological quality of perseverance and optimism of revolutionary martyrs, but also help themselves to establish lofty ideals, firm the ideals and beliefs, cultivate patriotic feelings, and cultivate the positive psychological quality and the sound personality. [9]

3.3 Educational Connotations of Craftsman Culture

Craftsman culture is a process where knowledge and action should go hand in hand, and it turns the inner spiritual concepts into the external skills. The culture is the behavior and the value orientation presented by workers in the process of professional work, and it is also the pursuit of excellence and perseverance towards quality and professional attitude. The behavior of craftsman culture is reflected in the process of continuously improving the product technology and meticulously refining the product quality, while the professional value orientation of craftsman culture is reflected in pragmatic and hardworking spirit. [10] Craftsman culture is the organic synthesis of technology and craftsmanship,

technology is the carrier of craftsmanship training, and craftsmanship is the internal drive of technology improvement. Injecting emotions into technology can purify students' minds and souls, promote the integration of behavior and consciousness, and make students truly realize their responsibility and mission in the inheritance of craftsman skills. [11]

3.4 Educational Connotations of Innovative Culture

Innovation is the soul of a nation's progress and the primary driving force for development. Colleges and universities should shoulder the important historical mission of cultivating innovative talents. Colleges and universities should cultivate the innovative thinking, enhance the creative ability and motivate the innovative potential of college students through activities including the edification of the innovative cultural atmosphere, the organization and operation of innovative activities, and the feedback and stimulation of innovative and entrepreneurial achievements. [12] Innovative culture can stimulate students' inner original power, enrich their thinking mode, as well as promote students' independent learning, independent exploration and independent thinking. In this way, the development of students' independent character can be better developed. The achievements of innovation can help students build strong self-confidence and bring great satisfaction to the spirit. Moreover, they can also enhance students' ability to resist setbacks so that students have a greater motivation to move forward. [13]

IV.CONSTRUCTION AND PRACTICE OF “FOUR CULTURAL FUSIONS” TALENT CULTIVATION MODE

4.1 Construct the Traditional Culture Education System of “In-class, After-class, Classroom and Social Practice”

The excellent traditional culture should maintain that: classroom education is combined with practice education; school education and family education are combined with social education; pertinence is combined with systematicness. Key points are highlighted and promoted at different levels inside and outside class and school. [14] Therefore, to carry out the education of the fine traditional Chinese culture, colleges and universities should not only give full play to the classroom as the main front but also play the role of extracurricular activities and social practice. The excellent traditional Chinese culture education is combined with the ideological and political education, professional education, innovation and entrepreneurship education, social practice, etc. in order to create a multi-type education platform and expand the multi-form education approaches, so as to realize the educational purpose of improving self-restraint and tempering character. [15]

4.1.1 Create the field domain environment and improve the effect of implicit education

Cultural education includes not only the “infusing” knowledge dissemination and the “experiential” social practice, but also the subtle implicit education. “Environmental education” is an important means of implicit education. Cultural education field environments such as academies, stadiums, sculptures,

galleries and parks should be established to integrate the traditional culture into the spatial carrier such as campus buildings, cultural landscapes, etc. In this way, a subtle atmosphere environment is created, and a large platform for traditional culture education is established. Implicit classes are built on campus, and students are made to feel the edification and immersion of the traditional culture in a silent way in order to achieve the integration of man and nature, the unity of thought and action. Finally, the effect of environmental education is realized. [16]

4.1.2 Refine internally and externally, expand the educational path multi-dimensionally

The excellent traditional culture education is a systematic project, which needs to be integrated into the teaching material system and the extracurricular practice. Besides, it should also run throughout the whole process of talent cultivation. In this way, create a four-in-one traditional culture education system of “in-class, after-class, classroom, and social practice.

Set up compulsory courses and lay a solid foundation for education. The excellent traditional culture education should be included in the talent cultivation program, and the education content should be integrated into the curriculum system. Meanwhile, the elective courses of the traditional culture education such as etiquette, Sinology, poetry and music should also be set up simultaneously. The educational strategy should be adjusted timely according to the development of the Times and the needs of students’ growth, so that the excellent traditional culture education can form a stable educational “irrigation” mode.

Open Sinology schools and establish immersion positions. Sinology schools including Confucius schools, Confucian business schools, painting and calligraphy schools, etc. will be established to turn the schools into the Sinology education platform, spiritual home, moral highland and cultural palace, and the Confucianism spirit will be integrated into the professional quality education and internalized into daily behavior norms.

Set up specialized classes and cultivate talents and ladies. The seminars of excellent traditional culture are held. Students mainly study the *Four Books*, and they also minor in the *Four Classics*, calligraphy, music, etc., to cultivate the elites and backbones who carry forward the Chinese culture. The etiquette classes for ladies are also opened up and courses such as *Female Virtues*, *Etiquette* and *Tea Art* are offered. Ladies learn the tea art and the dance accompanied by music, and they also recite the *Book of Poetry* so as to cultivate contemporary female college students with traditional morality and civilized manners.

Open colorful clubs to spread classic art ceremony. Based on extracurricular activities, clubs such as Chinese studies society, tea art society, literature society, Hanfu society and other societies are set up. Moreover, traditional cultural activities such as tea art show, Hanfu cultural festival, poetry recitation, and knowledge competitions are held to inherit classics, popularize knowledge, and show the charm of traditional culture.

4.2 Construct Lei Feng Educational Mode with Red Culture as the Inheritance

Lei Feng spirit is the typical representative of red culture. Patriotism, dedication, devotion and innovation are the essence of Lei Feng spirit, and they are also the requirements for the code of college students' professional ethics in the new era. Qingdao Huanghai University has established the normal mechanism to learn from Lei Feng, which gives full play to the educational function of the extracurricular activities and forms the Huanghai mode of learning from Lei Feng---"one position, two platforms, three teams".

4.2.1 Rely on one position and realize the advantages of resources

In 2011, Qingdao Huanghai University became the first university to build the Lei Feng memorial hall. It cooperates with the other two Lei Feng memorial halls in Fushun, Liaoning Province and in Wangcheng, Hunan Province to open "Lei Feng lectures". Some of Lei Feng's comrade-in-arms have been invited as visiting professors to promote the research and inheritance of Lei Feng spirit. Lei Feng's spiritual education will be integrated into the freshmen's entrance education in the university. The "6 ones" activities have become the compulsory course for all the freshmen in Qingdao Huanghai University. They are required to visit Lei Feng memorial hall, read Lei Feng's diary, listen to a report on Lei Feng spirit, watch a movie about Lei Feng, tell a story related to Lei Feng, or help others. Through the close understanding of Lei Feng, the students are guided to deeply understand the rich connotations of Lei Feng spirit and the value of the Times in the historical and social background.

4.2.2 Build two platforms and expand the educational routes

Qingdao Huanghai University has continuously broadened its educational routes by creating two platforms: the practical education and the ideological and political education of the Internet. The practical education platform takes volunteer service as the starting point, constantly improves the construction of the practical education platform, and organizes students to participate in the volunteer service for large-scale competitions by means of the cooperation and construction between schools and localities, so that students can increase their knowledge and experience in social classes. Based on professional advantages, the brand service activities are conducted and they include small home appliance repair, volunteer teaching, and the voluntary diagnosis in the community. The school motto of "the unity of knowledge and practice" is practiced in volunteer service. The educational advantages of the online ideological and political platform are fully realized, and the online educational routes of Lei Feng spirit are explored. Colorful activities have been carried out as follows. The class leader Lei Feng is invited to give the online league lecture; the "cloud tour" of Lei Feng memorial hall gets organized; the "cloud broadcast" of the volunteer stories is conducted; the exhibition of "excellent students from Qingdao Huanghai University", and the "cloud relay" of Lei Feng spirit, etc. The Lei Feng spirit education is integrated into the online ideological and political education, and a highland for the online ideological and political education is established.

4.2.3 Build three teams and strengthen the practical ability

The university has set up three teams, namely “Little Huang Feng” volunteer service team, “Blade” national flag guard and “Feng Fire” —Lei Feng spirit lecture team. Lei Feng elements are integrated into the social practice. “Little Huang Feng” volunteer service team is committed to carrying out the voluntary education, poverty alleviation, community construction and other activities. The “Blade” national flag guard, mainly composed of demobilized students, carries out activities such as flag-raising ceremonies, military training and national defense education and publicity to inherit the red gene. The Lei Feng spirit lecture team of “Feng Fire” is composed of outstanding college students. Through the typical deeds of “promising youth—Huanghai Stories”, the lecture activities are held to stimulate students’ enthusiasm to follow the examples.

4.3 Construct the Practical Education System of “Platform Integration, Hierarchy Progression” Guided by the Craftsman Culture

Craftsman culture is the core content of the engineering literacy in engineering education and the concentrated embodiment of engineering ethics, engineering innovation and engineering practical ability. Qingdao Huanghai University integrates the craftsman culture throughout the process of the talent cultivation, namely mental education, moral education, refined skills. It also adheres to the “four-craft” concept of resolution, originality, craftsmanship and craftsman. The integration of production and education is deepened and the practical ability is paid attention to, which constructs the practical education system of “platform integration, level progression”. The craftsman spirit of college students is cultivated in an all-round way. [17]

4.3.1 Deepen the integration of production and education, and construct the practical educational platform

Qingdao Huanghai University cooperates with the industries and enterprises to establish 8 industrial colleges including robots, the new generation of information technology, cross-border e-commerce. They jointly establish Qingdao public service platform of industrial robot talent cultivating, the intelligent equipment innovation center, Qingdao industrial alliance of cross-border e-commerce for talent cultivation. Moreover, they also build the academic exchange platforms such as enterprise classrooms, technician studios, and craftsmen of great powers. The practical educational platform of integrating industry and education is constructed. An all-round, whole-process and all-factor industry-education integration mechanism is constructed, in which enterprise technicians enter classrooms, engineering projects enter textbooks, practice is conducted in workshops, and graduation projects enter enterprises.

4.3.2 Emphasize the practical application and realize the hierarchy progression of the ability

Focusing on the improvement of practical ability, Qingdao Huanghai University integrates the professional requirements of enterprises with the teaching content, timely supplements the new industrial technologies and integrates them into the practical teaching process. The basic practice links are

strengthened such as in-class experiments, metalworking practice, curriculum design and concentrated practice. The engineering practice projects are introduced to improve the comprehensive practice ability, realizing the seamless docking of engineering projects and comprehensive design as well as the organic integration of practical application and production practice. The innovative competition is integrated into part of the comprehensive design process to realize the reciprocal intersection and integration as well as the mutual penetration between practice and innovation. The advanced practice and innovation ability of college students gets enhanced. Graduation practice and graduation projects are actively promoted to form the hierarchical progression of the practical ability involving “basic practice + comprehensive design + innovation competition + engineering practice”. Through the practice and training, students can understand the great value of craftsman spirit in the practice and forge the quality of craftsmen. [18]

4.4 Build an Innovative Talent Cultivation System of "Three types, Four Subjects and Multiple Dimensions" Driven by Innovative Culture

The key elements of the innovative talent cultivation are cultivating the innovative thinking and creating the innovative cultural atmosphere. College students have solid professional knowledge and active thinking, which is the best time to cultivate the innovation ability, and also the key to promoting the transformation from “made in China” to “created in China”. Qingdao Huanghai University regards the innovation ability as an important goal of the talent cultivation, and strives to create an ecosystem linking innovation, entrepreneurship and circulation. This system integrates four parts including industry, schoolwork, entrepreneurship and employment. It has formed three types: technological innovation, online business entrepreneurship and artistic creativity, which go hand in hand. Moreover, an innovative talent cultivation system is established, where the four main bodies of universities, administrations, societies and enterprises are involved together, and talents are cultivated from multiple dimensions such as curriculum system, practice system, extracurricular activities and workshops. [19]

4.4.1 Strive to build the three types of platforms through the coordination of four main bodies

Qingdao Huanghai University gives full play to the advantages of the multi-party collaborative education---"universities, administrations, societies and enterprises", and they jointly build the innovation and entrepreneurship incubator base and science and the technology innovation workshops for college students in Shandong Province. In addition, they provide education and guidance on innovation and entrepreneurship. More than 300 experts from the government, industries and enterprises are invited as the innovation and entrepreneurship mentors who guide students to carry out innovation and entrepreneurship. According to the characteristics of the disciplinary development and the engineering advantages of the institute of intelligent manufacturing, scientific and technological innovation competition activities are carried out, and a scientific and technological innovation management and support system is built. Moreover, an interactive scientific and technological innovation environment of “mutual promotion between learning and competition, between learning and innovation, between competition and innovation”. Based on the business advantages of the international business schools, activities related to online business, cross-border e-commerce trade services and entrepreneurial are carried out to realize the integration of industry and education, bilingual integration and Confucian business integration. In addition, the

three-in-one innovation and entrepreneurship mode is established and it integrates schoolwork, industries and entrepreneurship. Based on the resource advantages of the art colleges, the design of workshops is regarded as the carrier, and famous teachers lead students in cultivating their innovative design ability and improving their artistic cultivation mainly in the form of horizontal projects and design competitions.

4.4.2 Create the three-dimensional education approach through multi-dimensional progress

Qingdao Huanghai University integrates the cultivation of college students' innovative entrepreneurial ability into links such as their graduation requirements, cultivation targets, course system, learning evaluation, extracurricular activities. Based on carriers including the scientific and technological innovative competitions, the innovation and entrepreneurship training projects, scientific research projects, etc., a lot of innovative entrepreneurial activities have been promoted deeply to realize the all-round integration of both the professional education and the innovation and entrepreneurship education. On the university level, the mentor responsibility system of science and technology innovation is implemented to guide and encourage students to actively participate in college students' science and technology innovation activities, and relevant policies are formulated to give strong support and rewards. On the level of secondary colleges, innovation workshops are established to guide students to actively participate in various innovation and entrepreneurship activities, and an innovation and entrepreneurship mode based on the workshop system is formed. In order to promote the transformation of scientific and technological innovation products, the university has established an innovation and entrepreneurship incubation base and an "innovation and entrepreneurship" service platform including entrepreneurship nursery, entrepreneurship training, entrepreneurship incubation, entrepreneurship acceleration and entrepreneurship tracking. The average annual transformation reaches 35 achievements.

V. INFLUENCE OF "FOUR CULTURAL FUSION AND EDUCATION" IN PROMOTING STUDENTS' MENTAL HEALTH

Younger students are at high risk of suffering from mental health problems. *The Report on the Development of Chinese National Mental Health (2019-2020)* made a survey on four age groups who are aged 18-24, 25-34, 35-44 and over 45, respectively. The research results showed that: the mental health index of students aged 18-24 is lower than that of other age groups. With the increase of age, the mental health index tends to increase year by year, while the level of depression decreases with the increase of age. This result shows that the mental health problems of adolescents are more frequent, so it is necessary to pay attention to the prevention and intervention of the mental health problems of young people. [20,21]

Since the mode of "four cultural fusion and education" was implemented, Qingdao Huanghai University has established a solid protective screen for students' mental health education from the source. [22] In order to grasp the psychological dynamics of students in time, strengthen the source management, and prevent the occurrence of psychological crisis, the research team will conduct psychological

evaluation of students through the Regg psychological testing system every year. In the test, SCL-90 questionnaire is used, and the data are collected through online answers. A total of 9,347 students at school were psychologically evaluated in 2017, 2018 and 2020. In order to study the influence of the “four cultural fusion and education” talent cultivation mode in applied colleges and universities in promoting students’ mental health from the perspective of engineering education, non-parametric test was conducted on the detection rate of students with psychological problems in the past three years, and the results are as follows:

TABLE I. Detection rate comparison of students with psychological problems in the past three years

Year	Detection rate of students with psychological problems	<i>p</i>	<i>df</i>
2017	15.45%	<0.001	2
2018	11.61%		
2020	9.15%		

It can be seen from Table I that: there is a significant difference in the detection rate of students with psychological problems in 2017, 2018 and 2020, $P < 0.001$. Therefore, it is necessary to use Bonferroni method for correction and conduct the post-event pairwise comparison of the significance level. Through the pairwise comparison, the results are shown in Table II:

TABLE II. Post-event pairwise comparison of the significance level through Bonferroni correction

Sample 1-Sample 2	<i>SE</i>	Standard test statistics	<i>p</i>	<i>adjusted p</i>
2017-2018	37.748	18.451	<0.001	<0.001
2017-2020	32.057	50.333	<0.001	<0.001
2018-2020	34.619	26.489	<0.001	<0.001

As can be seen from Table II, a significant difference was shown between the detection rate of students with psychological problems in 2017 and 2018, $p < 0.001$, that is, the detection rate of students with psychological problems in 2018 is significantly lower than that in 2017. A significant difference was also shown between the detection rate of students with psychological problems in 2017 and 2020, $p < 0.001$, that is, the detection rate of students with psychological problems in 2020 was significantly lower than that in 2017. Another significant difference was shown between the detection rate of students with psychological problems in 2018 and 2020, $p < 0.001$, that is, the detection rate of students with psychological problems in 2020 was significantly lower than that in 2018. Thus, it can be seen that: the newly enrolled students have the highest psychological detection rate. In the practice of the “four cultural fusion and education” talent cultivation mode, the psychological detection rate decreased year by year, and students’ psychological health level got significantly improved. This further confirms the influence of the “four cultural fusion and education” talent cultivation mode in effectively promoting students’ mental health.

VI. CONCLUSION

With the development of the Times, the psychological state of college students shows complex and changeable characteristics, and the mental health education in colleges and universities also faces various tests. Qingdao Huanghai University establishes the “four cultural fusion and education” talent cultivation mode. In the mode, the connotations of “traditional culture, red culture, craftsman culture and innovative culture” are integrated into the mental health education. It not only enriches the content system of the psychological health education, but also improves the high-quality engineering and technical talent cultivation system. In this way, students’ comprehensive quality and practical ability to innovate has got completely improved. It provides an example for the reform of the talent cultivation mode in applied colleges and universities from the perspective of engineering education.

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