

Research on Industrial Education in Modern Wenzhou and Its Implications for Contemporary Times

-- Take Sun Yijang as An Example

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Abstract

Sun Yijang is not only a famous master of scripture in modern China, but also a patriotic industrial educator with a heart for the world. During the thirteen years from 1895 to 1908, Sun Yijang founded many new schools and industrial schools and made painstaking efforts in promoting industrial education, making historic contributions to the development of industrial education in Wenzhou. An overview of Sun Yijang's industrial education activities and educational thinking, Sun Yijang's activities and ideas of industrial education are highly compatible with the provisions of *the China National Vocational Education Reform Implementation Program*, promulgated by the State Council of PRC in January 2019, such as practical talent training system, high-level training bases, vocational education teachers and sound funding mechanism. Under the new situation of reforming vocational education and comprehensively improving the quality of vocational education personnel training, it is timely to deeply explore and study Sun Yijang's vocational education activities and educational thoughts, which have profound practical significance and important inspiration.

Keywords

Modern Wenzhou Industrial Education; Sun Yijang; New Style School; Industrial School; *the China National Vocational Education Reform Implementation Program*.

1. INTRODUCTION

Wenzhou has always occupied an important position and played a pivotal role in the history of industrial education in Zhejiang and even in China. In the process of promoting the development of Wenzhou industrial education, many educators emerged, and Sun Yijang was one of them. Sun Yijang (1848-1908), his style name known as Zhongsong, or Zhong rong, his pseudonym as Zhouqiong, was a native of Rui'an, Wenzhou, Zhejiang Province. He was not only a famous master of scripture in modern China, but also a patriotic industrial educator with a heart for the world. While concentrating on his studies, he planned and founded 309 new schools of various kinds in 16 counties of Wenzhou and Lishui, including 27 industrial schools[1], which shows that Sun Yijang occupied an important position in modern industrial education and was a true industrial educator. He served as the premier of the Wen Division of School Affairs, the chief of the Ministry of Justice of the Qing Government, the advisory officer of the Ministry of Education, and the councilor of Zhejiang Province School Affairs, etc. He was also elected as the vice president and president of the Zhejiang Education Society and other academic positions. Sun Yijang's educational activities were mainly carried out in the southern Zhejiang area, such as Ru'an, Wenzhou and Bizhou, and he made indelible contributions to the establishment of industrial education in southern Zhejiang and the early vocational education system in Zhejiang and even China, and to the modernization of education in Wenzhou by

founding new-style schools, establishing various rules and regulations for school management, and organizing societies for studying education and improving social customs. From the combing of Sun Yijang's industrial education, we can get a glimpse of the development of Wenzhou's modern industrial education, and explore and analyze the connotation and shining points of his educational thought, which can provide reference and important inspiration for the sustainable development of contemporary vocational education, regional integration of industry and education and economic development.

2. HISTORICAL BACKGROUND OF SUN YIJANG'S FOUNDING OF INDUSTRIAL EDUCATION IN WENZHOU

In 1895, the Qing government was defeated in the Sino-Japanese War and forced to sign unequal treaties, which intensified national conflicts and increased the danger of the extinction of the Chinese nation. At the same time, it also awakened Sun Yijang who was buried in the study of scripture. He believed that the war was lost because of the corruption and incompetence of the Qing government on the one hand, and the backwardness of Chinese science and technology on the other[2]. As he was influenced by the ideas of Liang Qichao and other bourgeois reformists, he believed that it was not beneficial to concentrate on the study of scriptures, and that it was necessary to set up industrial schools to develop people's wisdom and take the road of education to save the country. Therefore, Sun Yijang took the teaching of scientific knowledge and the establishment of industrial schools as an important way to realize the ideal of saving the country.

3. SUN YIJANG'S JOURNEY OF FOUNDING INDUSTRIAL EDUCATION IN WENZHOU

3.1. Establishing the Rui'an Arithmetic School

As for the establishment of schools, Sun Yijang advocated that special schools of arithmetic should be established first. He believed that arithmetic was the foundation of all modern western sciences and that it was necessary to be proficient in first[3]. He wrote in *the Constitution of the Academy of Arithmetic* that arithmetic is not only "one of the six arts of elementary school" and "the essence of usefulness", but also has the function of "measuring the sky and the earth, making weapons and ruling the army, and its use is inexhaustible". It also has a great role[4]. So, in the winter of 1895, he and the local gentry in Rui'an small East Gate outside the words of the Sang House to discuss the preparation of setting up Rui'an School of Arithmetic. At the meeting, Sun Yijang and the two brothers Huang Shaoji and Huang Shaodi and other nine people as the initiator, and jointly prepared for the school. Soon, they jointly applied to Wenzhou Prefecture and Rui'an County Office for the establishment of the school. In order to strengthen the propaganda and management of the school, he personally wrote and participated in *the formulation of the Preface of Rui'an Academy* and *the Regulations of Rui'an Arithmetic School*, which were published in the newspapers of Shanghai at that time, such as *the Journal of Arithmetic* and *the Times*, expanding the influence and popularity of the school in the country.

In the first month of 1896, Sun Yijang selected the former Zhuo Gong Ancestral Hall in Rui'an County (now the Party School of the Rui'an Municipal Committee) as the site of the School of Arithmetic, with more than ten teaching facilities such as a hall, classrooms, a playground, a study room and a newspaper reading room. Sun Yijang thought that the teaching content of the Rui'an School of Arithmetic was very different from that of the old-style school, and decided to rename the School of Arithmetic as "Xuejiguan". The word "Xueji" is from *the Book of Rites - Inner Rules*, which means "learning various algorithms"[5]. On April 13, 1896, the Rui'an School

of Arithmetic was officially opened, and the arithmetician Lin Tiao Mei was hired as the chief instructor (i.e. the director). The students were divided into two classes, class A and B, and each class attended nine days of classes per month. Each class offered courses in mathematics, physics, and chemistry. In addition to the regular classes, books and newspapers prepared in the library were distributed for students to borrow. Students could ask questions and the curator would answer them. The Rui'an Academy was the first specialized school founded by Sun Yijang to teach arithmetic, and it was also one of the most influential schools in his educational activities. On the occasion of the first anniversary of the establishment of the School of Mathematics in Rui'an in the spring of 1897, Sun Yijang wrote a couplet in praise of the school and hung it on the eaves of the hall of the School of Mathematics. The couplet reads:

*A mentor in his hometown, bright and loyal, specializing in calculations only for the rest;
A great talent for learning, for science and for art and big help for the wizards [6].*

This couplet expresses Sun Yijang's vision and good expectation for the School of Mathematics to cultivate practical talents in society with excellent teaching faculty. By the time the school was three years old, the students had mastered a variety of skills, including triangulation, and those who excelled were chosen by the Rui'an County Records Bureau to complete a map of the county's fifty-five capitals the following year using the new method. At the end of 1904, the Ruian Academy of General Studies was closed, and during the eight years of its establishment, the Ruian Academy of Mathematics had cultivated a group of useful talents with western scientific knowledge and new ideas for Zhejiang, many of them studied in Japan and became bourgeois revolutionaries, making important contributions to the 1911 Revolution.

On the eighth day of March, 1899, the Rui'an Academy of Mathematics and the academics outside the academy discussed following the example of the Shanghai Society of Mathematics and setting up the Rui'an Society of Mathematics. Sun Chong, Sun Yijang's nephew, was elected president, and Sun Yijang wrote *the Preface to the Society* to encourage it. With Sun's support, regular seminars were held and members were encouraged to write and publish academic papers, making the Society one of the earliest professional mathematical academic groups in China[7]. However, due to the fragmentation of its members, the Society existed for only three years and was forced to disband at the end of 1901. Sun Yijang founded the Rui'an Academy of Mathematics, which embodied the goal of "meeting the needs of the time" and the characteristics of a new modern bourgeois school in terms of the purpose of schooling, teaching content and teaching management methods, to develop people's intellect internally and defend against strong enemies externally. Although the schooling of the Rui'an Academy had certain feudal overtones, it was the earliest new-style school in the bourgeoisie's Restoration period. It occupies an important position in the history of modern Chinese education and has an impact.

3.2. Founding Wenzhou Sericulture School

As we know, China is the earliest country in the world to raise silkworms, reel silk, weave silk, it is known as the "silk country"[8]. Wenzhou traffic is not developed, and no minerals are not mined. However, Wenzhou has been the "hometown of eight silkworms" since ancient times. In order to open up a wide source of profit, in order to make the country rich and strong, the Qing government had asked around the revitalization of the sericulture industry and the establishment of sericulture school. In the spring of 1896, Sun Yijang and several friends together to raise funds to found Wenzhou sericulture school. Silkworm Academy is located in Cangqiao behind Guandi Temple in the county of Yongjia (now West Campus of Wenzhou Experimental Middle School). At the beginning of the sericulture school, Sun Yijang wrote "*a letter to Wenzhou fellow townsmen*". Sun Yijang proposed the establishment of the school, enrollment, translation of foreign teaching materials, opening experimental fields and improved sericulture and other ideas to run the school. He also drafted the Rules and Regulations of the Wenzhou Silkworm Academy, which had specific regulations on the

employment of teachers, the number of students, courses, equipment purchases, and teaching materials [9]. Wenzhou Silk Worm Academy in the training objectives, is committed to creating to "meet the needs of the times" of the sericulture talent; in the curriculum, it breaks through the constraints of the traditional scriptures, and opens the western and industrial courses; in the teaching methods, it uses both Chinese and Western new methods, and combines "teaching" and "learning" to teach the skills of feeding silkworms and planting mulberries. In 1901, Tong Zhaorong who was Wen Chudao, changed the Wenzhou Sericulture Academy into the Wenzhou Sericulture School, donated thousands of yuan, purchased hundreds of thousands of mulberry seedlings every year, and planted 20 acres of lake mulberry as an internship base for students. The school adopted French, Italian and Japanese sericulture teaching materials; the school had sericulture rooms, reeling cars, high magnification microscopes and other teaching facilities, the annual output of more than 10,000 improved silkworm seeds, thus made the sericulturists from the counties of Yongjia, Rui'an, Yueqing, Pingyang and other places to order them; in the spring silkworm season, the school sent students to the sericulture area to promote good mulberry seedlings, improved sericulture and sericulture techniques. The school also immediately rose to fame, and had a great impact in Wenzhou, Zhejiang and around the country. Lin Qi, the magistrate of Hangzhou, wrote to the prefect of Wenzhou to ask for the constitution and teaching materials of the Wenzhou Silk Worm Academy as a reference when he was preparing to run the Hangzhou Silk Worm Academy. According to Professor Tong Fuyong of Hangzhou Normal University, a famous scholar who studied Sun Yijang, Wenzhou Silk Worm Academy was actually earlier than Jiangxi Gao Yao Silk Worm Academy, which was the first real industrial education school in China at that time[10], pioneering the modern agricultural education, and also set off the beginning of vocational education in China. In 1905, it was changed to Wenzhou Primary Silk Worm Industrial Academy; in 1911, it was changed again to Wenzhou Government Secondary Agricultural School.

3.3. Establishing the Rui'an Foreign Language School

In the 1860s, the foreign affairs movement emerged, the Guangzhou dialect museum was set up in Guangzhou and other places one after another. After the Sino-Japanese War, in the face of arbitrary slaughter by foreign powers and the strong impact of Western technology and civilization, many benevolent people called for the opening of people's wisdom, the spread of Western learning, and the development of learning to strengthen. Under the influence of this trend, Sun Yijang and Xiang Xiangzao were the first to establish a new type of school for learning foreign languages in Zhejiang Province -the Rui'an Foreign Language School. On February 16 of the year 1897, the 23rd year of Emperor Guangxu, the Rui'an Foreign Language School was opened. It was located at the Xiang Ancestral Hall on Fan Bridge Street in Rui'an County. The school was divided into two classes: Western Language class (English) and Eastern Language class (Japanese). Each class enrolled 15 students, specializing in English and Japanese, as well as learning about general knowledge of world history and geography. The full-time foreign language instructor was Cai Huaqing, a graduate of St. John's College in Shanghai, who was highly paid. *"The History of the Western countries"* compiled by Sun Yi-jean was adopted as a textbook, and donated maps of China and abroad were hung in the classroom [11]. In 1902, the Qing government issued an edict that "all schools should be converted to academies," and the Rui'an arithmetic school and the Rui'an foreign language school were merged into the Rui'an General School, which was closed until 1904. Although only English, Japanese and general knowledge of history and geography were taught during the five years of operation, some students were still successful in learning, and almost all of the young students who studied abroad came from Rui'an foreign language school. The most famous of them is Xiangchao, who first went to Shanghai to study at Shanghai Nanyang Public College and then studied at Columbia University in the United States, where he received a master's degree. When he

returned home after his studies, he won the first prize in the Qing court examination for foreign students returning to China, and was then called the "foreign scholar". After the founding of the Republic of China, he served as the Undersecretary of the Ministry of Finance, the Director of Salt Affairs and the General Office of the National Salt Audit, etc. His life was recorded in the Who's Who of Early China.

3.4. Establishing the Rui'an Agricultural Association

Sun Yijiang not only attaches importance to students' receiving vocational knowledge in the classroom, but also promotes vocational education through the establishment of agricultural associations and other institutions. In the summer of 1896, Luo Zhenyu, Xu Shulan and others organized the establishment of the Society for the Promotion of Agriculture in Shanghai, and more than ten people joined the Society in Rui'an, such as Chen Qiu, Huang Shaoji and Huang Shaodi. In December, Sun Yijiang and the Huang brothers initiated the establishment of the Rui'an branch of the Agricultural Affairs Association, which plans to recruit 100 members, raise 5000 yuan of shares, and land 30 or 40 *mu* as a test site for local crops improvement and agricultural production promotion. Sun Yijiang also drafted the constitution of the Rui'an branch, Thirty nine members of the branch headed by Sun Yijiang jointly reported to the official for filing, and Sun Yijiang personally drafted *the Agricultural Affairs Manuscript*, in order to seek wider sponsorship and support[12]. In February 1898, the Rui'an branch of the Agricultural Association was officially established. The Huang brothers were the president and vice president, and Sun Yijiang was the research minister. Hong Bingwen was the minister of experimentation, and the main interview. The branch office is located in Zhuo Gong Temple in Ruian while the Shennong Temple is the suburban office, the foreign-style agricultural tools, testing instruments and plant seeds, etc. will be displayed for free access. Since the Huang brothers were serving in other places, Sun Yijiang presided over the actual work of the association and carried out relevant activities. Later, based on the interview information, Hong Bingwen prepared and published materials such as *Ruian Agricultural Affairs Narrative*, *Ruian Native Products Narrative* and *Wenzhou Tea Narrative*[13], which accelerated the spread and popularization of early vocational education such as agricultural knowledge and practical technology.

3.5. Founding the Ruiping Chemical School

Ruiping chemical school was founded for the same reason as Rui'an arithmetic school, which aims to develop the people's intelligence, enrich the country and defend it against foreign enemies. Sun Yijiang founded the Wenzhou sericulture school and the Rui'an arithmetic school in 1896 and the Rui'an foreign language school in 1897. He believed that chemistry was the panacea for wealth and the most practical discipline in modern Western studies [14]. On March 15, 1899, Sun Yijiang, together with his friends such as Yang Jingcheng, Wu Zheng and Jin Hui, raised funds, to purchase books, instruments, and pharmaceuticals, and enrolled thirty students [15], and founded the first chemistry special school in modern Chinese history-the Ruiping Chemical School in Wenzhou. He wrote in *the Origin of Rui Ping Chemistry School*: "The science of the west is from arts to the road, and chemistry is especially popular among experts. The research is extremely subtle, and is of great use.The reason for self-improvement is not to start school before it starts. Inside, there are Beijing Normal University, and outside, there are a large number of provincial public and private schools, all of which take chemistry as the top priority, while Wenzhou is not the only one" [16]. In 1901, the Qing government ordered the abolition of the imperial examinations and the establishment of schools, and the country saw the climax of the establishment of new-style schools. The Wenzhou government school was established, and the Ruiping chemistry school was forced to stop, while those with good grades were selected and transferred to the government school to continue their studies.

3.6. Proposing Establishing Business Tutoring Schools

In order to make up for the lack of talent training in industrial schools, in November 1902, Sun Yijang founded the Rui'an speech association based on the suggestions of Lin Zusui, Sun Jipeng and Sun Gongquan. It met regularly on the first and fifteenth day of each month. The lecturers mainly came from teachers and students of various schools, merchants and peasants and workers [17]. At the speech, Sun Yijang addressed the issue of amateur tuition education,

which drew great attention from those present. In the first month of 1903, under the initiative and influence of Sun Yijang, XuBian, a member of the Oratorical Society, founded the Practical School, Chen Chuyuan founded the Industrial and Commercial School and Yang Yujun founded the Business School, and the three schools were opened at the same time. The Practical School was located in the Northeast Enlightenment School in Rui'an, with an enrollment of 80 students, and offered courses such as literacy, composition, letters, written and bead counting. The business school was located in the Southeast Enlightenment School, with 50 students enrolled, offering the same courses as the practical school. The business school is located in the Southwest Enlightenment School, with 30 students enrolled, and the courses include letter writing, reading Yin Yang, Min and Yong languages. As the contents of the study were practical knowledge and skills necessary for business work, they were well received by the students. Sun Yijang has helped these three amateur tutoring schools with enthusiasm and strengthened the business guidance of the schools, which has met the demand of the business community for practical talents and solved the employment problem of some of them. Under the influence of these three schools, in the spring of 1904, Wenzhou prefectural counties rose to the climax of industrial schooling, Yongjia (now Wenzhou) ran 6, Yueqing County ran 3, Pingyang County 4, Taishun and Yuhuan (then under the jurisdiction of Wenzhou) 2 each [18], making Wenzhou counties and even Zhejiang Province industrial education has developed and grown rapidly.

3.7. Presiding over the school Affairs Subdivision of Wenzhou and Chuzhou

In order to strengthen the management and leadership of various types of education in the two prefectures, Wenzhou and Chuzhou. In July 1905, Wenzhou students, Chen Qi, Huang Qun and Wu Zhongrong, returned to home in the summer, proposed the establishment of a special agency to manage school affairs in the two prefectures of Wenzhou and Chuzhou. After the Wenzhou Road Tong Zhaorong and Wenzhou Beijing officials such as Huang Shaodi and many other people to fight, and the agency finally got the permission of the Minister of Education Zhang Baixi, Sun Jiading. On 18 November, the Wenzhou branch of the school was formally established, with Sun Yijang being publicly elected as the premier [19] and the Wenzhou Sericulture School being brought under the direct management of the branch of the school [20]. After his arrival, Sun Yijang immediately began to draw up *the temporary measures for the apprentice school*, distributed to the two prefectures and sixteen counties of the Wenzhou and Chuzhou [21]. In 1906, the Wenzhou and Chuzhou Branch Office of School Affairs was transformed into the Wenzhou and Chuzhou Branch Office of School Persuasion, with Sun Yijang still serving as premier [22].

In the spring of 1907, the Wenzhou Office of School Persuasion was also changed to the Wenzhou and Chuzhou Office of School General Agency [23]. On June 25-26, the Wenzhou Office of School General Agency was held in Wenzhou for the second time, the meeting was chaired by Sun Yijang, to study and discuss about The meeting was chaired by Sun Yijang, who studied and discussed more than ten matters concerning the revitalization of primary education and tutoring education for local agriculture, industry and commerce industries [24]. In May 1908, Sun Yijang was seriously ill and still planned to organize the Wenzhou Agricultural, Industrial and Commercial School. After the death of Sun, the General Office of the Wenzhou and Chuzhou School was abolished by order of the governor of Zhejiang, Feng Ruoyu. Although the Wenzhou Agricultural, Industrial and Commercial School could not be established in the end, it showed

that he was still enthusiastic and attached importance to the ideal of industrial education to save the country despite his old age and infirmity. According to statistics, during thirteen years from 1896 to 1908, in addition to the Chuzhou industrial preparatory school and the Yunhe girls' sericulture elementary school founded in 1905 and 1907, Sun Yijang personally founded and initiative to hold as many as 25 industrial schools in Wenzhou[25], popularized practical knowledge, for Wenzhou and Rui'an counties to train agriculture, industry and commerce practical personnel played a huge role.

4. THE HISTORICAL CONTRIBUTION OF SUN YIJANG'S MODERN WENZHOU INDUSTRIAL EDUCATION

4.1. Establishing New Specialized Schools to Spread Professional Knowledge

The founding of a new type of specialized school was one of the important means to realize Sun Yijang's ideal of industrial education for national salvation. The defeat of the Qing government in the Sino-Japanese War made him realize that only by founding industrial schools, developing people's wisdom and giving them a skill could the people become rich and the country become strong. Therefore, he founded new specialized schools such as the Rui'an arithmetic school, the Rui'an foreign language school, and the Rui'ping chemical school to disseminate expertise in mathematics, foreign languages, and chemistry to a certain extent and to train specialized talents.

4.2. Setting up Industrial Schools and Tutorial Schools to Teach Practical Technology

In addition to opening specialized schools, Sun Yijang also made full use of Wenzhou's location on the southeast coast, its temperate natural climate and long history of sericulture to advocate and open the Wenzhou Sericulture Academy and Wenzhou Sericulture School, which cultivated the skills of farming and mulberry cultivation. In 1903, Sun Yijang made an initiative at the Rui'an speech association that all sectors of industry and commerce should cultivate talents through tutorial schools. Its members, Xu Bian, Chen Chuyuan, Yang Yujun and others, were deeply encouraged and influenced by him. At the same time, they established practical school, industrial and commercial school, and business school, rapidly cultivating 160 practical talents for industry and commerce. In 1904, five counties such as Pingyang, Yueqing, Yongjia, Taishun and Yuhuan organized 20 industrial schools. So far, there are as many as 25 industrial schools. All the schools founded and initiated by Sun Yijang were privately donated or financed. In order to raise funds for running the school, Sun Yijang made great efforts to seek funding from relatives and friends, wealthy businessmen and gentry, and the Wenzhou Government of Ruian, and cultivated urgently needed practical talents for the agriculture, industry and Commerce and other industries in Wenzhou at that time.

4.3. Establishing Agricultural Associations, Societies and Other Academic Groups to Promote the Popularization of Vocational and Technical Education

Sun Yijang not only attached importance to the establishment of schools for students to receive professional knowledge in the classroom, but also attached great importance to the establishment of agricultural associations, societies and other academic groups to study and promote vocational and technical education. Founded in 1898, the Rui'an Branch of the Shanghai Agricultural Association (later referred to as the Rui'an Agricultural Association), a local agricultural academic group, was established to study agronomy and promote agricultural development. First of all, it promoted agricultural technology innovation. Sun Yijang believed that China, as a traditional agricultural power, deserved to introduce the advanced agricultural technology of Western countries and Japan, showing his keen vision of the importance of agricultural science research in Western countries. He wrote in *the narrative of the Rui'an Agricultural Society*: "With the booming of the west, academics are competing and flourishing.

The special founding of the agricultural house is chaired by the state. to whom the official had taken the chief. The Rui'an Agricultural Association also introduced foreign advanced agricultural technology knowledge and equipment, such as artificial breeding, warm house breeding, chemical fertilizers and new pesticides. This opened the eyes of the people in Rui'an and Wenzhou, who were closed to information at that time. Next, agricultural science and technology experiments and popularization activities were conducted. At the beginning of its establishment, the Agricultural Association leased the farmers' fields and borrowed the official wasteland to raise more than 50 mu of land for experimental fields. At the same time, through the Shanghai Agricultural Association, various crops such as mulberry were purchased for trial planting[26]. For the problems of pests and diseases encountered in agricultural production at that time, the Rui'an Agricultural Association also attached great importance to them and solved them. The Rui'an Farmers' Association's close integration of scientific research activities with the actual production still seems to have some progressive significance today.

4.4. Establishing the Wenzhou and Chuzhou Division of School Affairs to Strengthen the Leadership of Industrial Education in Wenzhou

According to the suggestion of the Wenzhou students studying in Japan and the support of Wenzhou officials at all levels and local gentry, in November 1905, the Wenzhou School Affairs Division was formally established as the highest educational administrative agency of the two Wenzhou governments, and Sun Yijang was elected as the premier of the School Affairs Division. In order to strengthen the management of education at all levels in Wenzhou, Sun attached importance to the establishment of rules and regulations, revised *the Wenzhou and Chuzhou Branch Office of Education Brief Regulations*, organized two meetings to deliberate on school affairs, formulated *the Wenzhou and Chuzhou Branch Office of Education Provisional School Management Law* and *Interim Measures for the Art Apprentice School* and other management systems, and established various departments in the Wenzhou and Chuzhou Division of School Affairs, such as the Department of Documents, the Department of Management, the Department of Investigation, the Department of Compilation and Inspection and the Department of Evaluation, compiled local teaching materials, organized a study tour of Japanese industrial education and discussed the development of local industrial education. In 1908, it also planned to establish the Wenzhou Industrial School of Agriculture, Industry and Commerce, and discussed it in the third meeting of the school affairs review. It was not implemented after Sun's death, but it shows his concern and attention to industrial education in Wenzhou.

5. THE ENLIGHTENMENT OF SUN YIJANG'S FOUNDING OF WENZHOU INDUSTRIAL EDUCATION ACTIVITIES FOR CONTEMPORARY TIMES

Although Sun Yijang's industrial education activities in Wenzhou were at a preliminary stage, the population and scope of education were still narrow, and he could not get rid of the shackles of feudal education ideology. However, he worked hard for more than ten years to save the nation and achieve education for national salvation, and made unremitting efforts for the industrial schools he founded and initiated, which to a certain extent met the demand of Wenzhou agriculture, industry and commerce for practical talents and accelerated the development of Wenzhou's modernization of education. More than one hundred and twenty years ago, Mr. Sun Yijang, the pioneer of industrial education in Zhejiang province, in the process of running industrial education in the two prefectures of Wenzhou Chuzhou, teaching management methods and educational management ideas, and contemporaries of the famous industrial educator Yan Fu advocated industrial education to save the country, the implementation of the "Western" curriculum, focusing on the combination of theory and practice, teaching according to the material have a lot in common. Many commonalities are found in[27]. Their educational ideas are still advanced and ahead of their time in the 21st

century, and have a high degree of compatibility and commonality with the *China National Vocational Education Reform Program* (hereinafter referred to as *the Program*) promulgated by the State Council of PRC in January 2019[28]. Especially under the favorable situation that the whole country is in a frenzy of reforming various fields of vocational education and comprehensively improving the quality of vocational education personnel training, it is timely to deeply excavate and study Sun Yijiang's vocational education activities and vocational education ideas, which have profound practical significance and contemporary inspiration.

5.1. Constructing and Improving the Application-Oriented Talent Cultivation System with Equal Emphasis on Training and Education, Career Demand Orientation and Practical Ability

The pioneers of industrial education in the late Qing Dynasty attached great importance to the construction and exploration of practical talent training system in their schooling practice. For example, Sun Yijiang in the founding of the Rui'an arithmetic school, Rui'an foreign language school, Ruiping chemical school and Wenzhou sericulture school to carry out the equivalent of secondary school level education, and at the same time, according to the urgent needs of the industrial development of the talent requirements of the initiative to hold a practical school, industrial and commercial school and business school and other amateur tutoring schools, practical personnel short-term training courses, always implement the "should be the needs of the time". On the other hand, it paid attention to the initial construction of the curriculum system. In February 1902, the Rui'an arithmetic school, Rui'an foreign language school were merged and renamed as the Ruian General School, and three classes of Chinese, Western and arithmetic were established. Sun Yijiang personally set the curriculum for each class, and each class offered major courses and general education courses. For example, the Chinese class majored in scripture, history, and scholarship; the Western class majored in English, English grammar, English world history, and English literature; the arithmetic class studied old and new Chinese and Western mathematics, as well as physics, chemistry, etc.[29]. The general courses of the three classes are Chinese literature, ethics and gymnastics (physical education), forming a scientific and reasonable curriculum for the training of talents. As proposed in Article 4 of *the Program*, "We should improve the equal emphasis on academic education and training; develop a talent training model that is oriented to vocational needs, focus on practical ability, and integrate industry-academia-research-application as a way"[30]. Under the current situation that the state vigorously advocates the reform of vocational education, both the 56 selected high level vocational schools with Chinese characteristics and 141 high level professional clusters, as well as many general higher vocational colleges and universities, should take the construction and improvement of talent cultivation system as the important mission and final footing of the quality of talent cultivation and put it into practice, so as to solidify the foundation of talent cultivation.

5.2. Creating and Improving the Hard Environment and Soft Power of Practical Training and Internship, And Strengthen the Construction of High-Level Practical Training and Internship Base

In the industrial education founded by Sun Yijiang, great importance was attached to the construction of experimental bases. After the establishment of the Rui'an Agricultural Association, although the Huang's brothers served as president and vice president, the actual Sun Yi, who served as minister of research, presided over the affairs of the Association. He leased and borrowed people's fields or reclaimed official wasteland as an experimental base for schooling, a wide search for various crop varieties for trial planting, so as to achieve the purpose of learning to use. In the summer of 1897, when the pest infestation was serious in Rui'an, the members sent the collected pest specimens to Shanghai for testing and diagnosis, and purchased Japanese "insecticide", making useful exploration in the construction of

experimental bases and social and technical services. The practice of being able to combine scientific research with production and provide scientific and technological services to society to solve practical problems still has something to learn from today. Article 11 in *the Program* states, "Increase policy guidance, fully mobilize the enthusiasm of all parties to deepen the reform and innovation of vocational education, and drive governments at all levels, enterprises and vocational institutions to build a number of shared resources, integrating practical teaching, social training, real production of enterprises and social and technical services in a high-level vocational education training base"[31]. Therefore, in the construction of practical training bases, higher vocational colleges and universities should not only increase the area of bases, capital investment and equipment procurement, but also pay more attention to the creation of soft environment and soft strength by strengthening school-enterprise cooperation, integration of industry and education, creating a real production practical training and practice environment, meeting vocational training teaching modules and effectively performing social and technical service duties, which is the key to the construction of practical training bases.

5.3. Constructing and Innovating the Ways and Means of VET Teacher Training, To Strengthen the Quality of Teacher Training

The construction of teachers is a strong guarantee of the quality of vocational education personnel training, but also the bottleneck and "pain point" of school-enterprise cooperation and professional (group) construction. In response to the shortage of teachers in industrial schools or the incompetence of some students who were born in the Imperial College in teaching duties, Sun Yijiang took measures to actively encourage students or subsidize serving teachers to study abroad in Japan[32], or organize the establishment of teacher education research societies, teacher reading societies, museum workshops, etc., to update teachers' teaching concepts and teaching methods to solve the contradiction of teacher shortage. In addition, in 1908, Sun Yijiang founded the Wenzhou Normal School, which opened a new way to formally train qualified teachers. This was also very rare in Wenzhou more than a hundred years ago, when Sun Yijiang, as the head of the highest local educational administration, always tried every possible way to solve and improve teachers' qualifications. Article 12 of *the Program* states: "Strengthen the construction of vocational and technical teacher training colleges, optimize the structure and layout, and guide a number of high-level engineering schools to organize vocational and technical teacher education. Regularly organize to select and send professional backbone teachers of vocational colleges to study and visit abroad " [33]. On the one hand, the state can select engineering vocational colleges with good school foundation and high school level among the selected high-level vocational schools to train teachers with undergraduate and master's degree levels of vocational technical teacher education; on the other hand, it can organize national and institutional level backbone teachers to go abroad for further training and study release programs, so as to drive the continuous improvement of teachers in vocational colleges through multiple initiatives and ways, thus strengthening and improving teachers' ability in theoretical teaching and practical teaching effectively. As early as January 2018, the Central Committee of the Communist Party of China (CPC) and the State Council in the "*Opinions on Comprehensively Deepening the Reform of Teacher Construction in the New Era*" clearly proposed to "comprehensively improve the quality of teachers in vocational colleges and build a high-quality double-teacher type teacher team." Specific initiatives are: strengthen the construction of vocational and technical teacher training colleges; high-level schools and large and medium-sized enterprises to build dual-teacher teacher training bases; the establishment of universities, industry and enterprises to jointly train dual-teacher teachers; vocational colleges and universities teachers to regularly practice in enterprises; enterprise and school managers, technical experts, backbone teachers mutual part-time system and a series of vocational colleges and universities teacher upgrading

blueprint[34] . These national-level teacher training reform and innovation initiatives point direct a way and implement a path for the new round of vocational education teacher training. If they are delivered and implemented on schedule, they will certainly give a strong impetus to the construction of teachers in vocational colleges and improve the level and quality of teachers.

5.4. Encouraging and Creating an Atmosphere for The Whole Society to Participate in Running Schools, Expand Funding Channels, And Increase the Investment in Vocational Colleges and Universities

Funding is one of the basic factors to ensure the normal development and operation of educational and teaching activities in vocational institutions. Adequate funding can keep the school's educational and teaching activities running smoothly. Most of the industrial schools Sun Yijang set up or initiated to set up were private ones, and they were financed by friends and relatives, or by seeking donations from rich merchants and gentry through personal connections, or by applying for grants from the government. Often due to the lack of funds for schooling, he went around for help and made great efforts to raise funds for schooling, insisted on running schooling for thirteen years with difficulty, and set up various forms of industrial schools blossoming in all counties of Wenzhou, so that more people gradually received new-style education, mastered a skill, and earned a living occupation, which promoted the revitalization of Wenzhou's economy and social development at that time. Article 16 of *the program* provides that "sound funding mechanism". Governments at all levels are required to establish a financial investment system, the implementation of the average cost of vocational institutions or public funding standards. While ensuring a reasonable investment in education, optimize the structure of education spending, new education funding to vocational education. Encourage social forces to donate and fund vocational education, and broaden the financing channels for running schools[35] . These new funding initiatives proposed by the state were unthinkable more than 100 years ago. However, at present in China, the whole society has not yet formed a good atmosphere for enterprises and individuals to fund and donate to schools. Therefore, it is necessary to form a society-wide concern for vocational education, and enterprises actively carry out school-enterprise cooperation, donate financial support, set up scholarships, participate in the operation of vocational schools and personnel training, promote better and faster development of vocational colleges and universities, and move into the ranks of the world's vocational education powerhouse at an early date.

6. CONCLUSION

There is no doubt that Sun Yijang, as the pioneer and initiator of modern industrial education in China, always insisted on the educational philosophy of "meeting the needs of the time" and "revitalizing the world to save it" in the process of founding industrial education, which has never become obsolete and has contributed to the promotion of Wenzhou and even Zhejiang education. The modernization process of education in Wenzhou and Zhejiang has established a strong historical merit. Even today, in the 21st century, it still has progressive significance and merit, and deserves a place in the history of modern vocational education in China. In the current context of the national boom of vocational education reform and the implementation of the "Double High Plan", Sun Yijang's idea of industrial education is still worthy of further practice, exploration and research.

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