



## Research Article

# Developments of the modern agricultural education in China before 21<sup>st</sup> century

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### Abstract

This article aims to review the developments of agricultural education in China before the 21st century. This study is original in its approach as it endeavors to comprehensively review the historical and political factors influencing the trajectory of agricultural education in China. The insights gained from this research contribute to a deeper understanding of the significance of agricultural education in national development. This study is original in its approach as it endeavors to comprehensively review the historical and political factors influencing the trajectory of agricultural education in China. The insights gained from this research contribute to a deeper understanding of the significance of agricultural education in national development. A chronological-historical analytical, and interdisciplinary approach is employed to investigate the evolution of agricultural education in the People's Republic of China (PRC). The study heavily relies on library, archival, and documentary research. The review indicates that, based on the historical analysis and political context, the developments of agricultural education in China before the 21st century played a crucial role in shaping the nation's rural development and economic progress. Findings of this study have significant theoretical implications, shedding light on the interplay between agricultural education and broader socio-economic development in China.

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## Introduction

Agricultural education in China is guided by three fundamental mandates: serving and promoting the development of agriculture, rural areas, and farmers through agricultural education (AE), research, and extension systems, aligning with practices in other countries (Yonggong and Jingzun, 2004). To comprehensively understand the current agricultural education in China, it is essential to delve into the history of the modern Chinese education system. This historical overview is organized chronologically, covering agricultural education before 1949, from 1949 to 1978, and after the Reform and Opening-up period from 1978 to 1999. Subsequently, the paper will conduct an historical analysis and discussions of the factors that have influenced the development of agricultural education in China.

China's educational landscape has historically been influenced by foreign models, beginning with Japan and the United States, and later adopting aspects of the Soviet Model due to its close relationship with the Soviet Union after the founding of the People's Republic of China. In the late 1970s, a significant transformation occurred in China's education system with the onset of the Reform and Opening-up process, mirroring the economic reforms of the same period. The primary objective of this reform was to modernize and revitalize the education sector. As a result, since the

initiation of the Reform and Opening-up in 1978, China has been globally recognized for its remarkable achievements in rural development, with agricultural education playing a pivotal role in this success.

This study relies on documentary research, drawing from primary source materials published in newspapers, periodicals, monographs, and books. These primary sources are supplemented by secondary source materials from China, Hong Kong, Taiwan, and other countries. Data in this study are derived from published Chinese official sources, UNESCO documents, World Bank reports, and related literature.

**The Founding of the Modern Chinese Education (Late 1890s-1949)**

China’s formal modern education system is now usually dated to the end of the 19th century when the earliest establishments similar to traditional Western universities emerged. In 1898, as a result of "Hundred Days' Reform", led by Kang Youwei and Liang Qichao, the Government of the Qing Dynasty agreed to establish "New Schools & Universities (or Xin Xue)", much against its own will, according to the style of Western education institutions (Bao Ping, 2006). Until then, although there were educational activities going on in ancient China for thousands of years, they failed to amount to anything one could describe as an educational system in the modern sense (Lee, 1993)

China's First Modern Educational System: the Japanese Model. As the late Qing imperial government regarded Japan as the admiring example of successful modernization, and much of its success was attributable to the modern education it had developed. They borrowed from Japanese education in all aspects, including the system, its purposes, content, and methodology. Therefore, a comprehensive nationwide educational reform was initiated to break away from the classical tradition and introduce a new school system spanning from elementary to university levels, including the agricultural education system. In 1902, the "Ren-yin Educational System" was implemented, followed by the introduction of the "Gui-mao Educational System" in 1903 (Bao Ping, 2006; Liu Yonggong, Zhang Jingzun, 2004).

During this period, the modern agricultural college established by the Qing imperial government laid the foundation for the development of agricultural education in China. As shown in Table 1, the modern agricultural educational institutions, established during the late 1890s to the early 1900s, underwent reorganizations and mergers with other agricultural education institutions, eventually evolving into the well-known agricultural colleges present in China today. According to the latest 2023 QS World University Rankings by Subject of Agriculture & Forestry, these institutions are now ranked among the top 100 in the world.

**Table 1.** Chinese agriculture institutions through time

	1897	1898	1904	1905	1909
Late 1890s to early 1900s	Hangzhou Sericulture School	Hubei Farming School	Agriculture Realm Sanjiang Teachers College	Agricultural Department of Peking University	Guangdong Agricultural Experimental Station and Training Center
	杭州蚕学馆	湖北农务 学堂	师范学堂农学博 物科	京师大学堂 农科	广东全省农事实 验场附设农业讲 习所
21 <sup>st</sup> Century	/	Huazhong Agricultural University	Nanjing Agricultural University	China Agricultural University	South China Agricultural University
	/	华中农业 大学	南京农业大学	中国农业大学	华南农业大学
2023 QS Rank of Agriculture & Forestry		71	37	11	47

Source: Universities Website, (2023) and Bao Ping, (2006).

The establishment of the Republic of China in 1912 marked the beginning of a transformation period. Shortly after the new regime came into power, they introduced the "Ren-zi Gui-chou Educational System", based on the "Gui-mao Educational System". As a series of events unfolded, Japan's 21 Demands in 1915, the promotion of Wilsonian ideals of democracy and self-determination, and The May Fourth Movement in 1919 all played a crucial role in the shift many university scholars and intellectuals' enthusiasm for the education system to America from Japan. In 1922, China implemented an educational system modeled after the United States, which is "Ren-xu Education System". Before the Anti-Japanese War broke out in 1937, both higher agricultural education and agricultural vocational education had experienced significant development. According to relevant data available at that time, in 1927, there were 24 universities and specialized agricultural schools across the country, with 14 of them being undergraduate institutions. By 1937, the number of higher education institutions in the country had steadily risen to 39 (Ping, 2006; Yonggong and Jingzun, 2004).

Then, due to the political instability caused by the Anti-Japanese War (1937-1945) and the Civil War between the Chinese Republican Party and the Chinese Communist Party (1946-1949), Chinese education experienced a slowdown in its development, and agricultural education was no exception. According to a study conducted by the Ministry of Agriculture, as of 1949, there were only 18 agricultural colleges and universities in the entire country, primarily located in the coastal provinces. Across the entire nation, there were a mere 928 teaching staff, spread among these 18 agricultural colleges and approximately 30 departments and faculties in comprehensive universities (Ping, 2006; Yonggong and Jingzun, 2004).

### **The Education Pattern of the Former Soviet Union (1949-1978)**

In 1949, the Chinese Communist Party (CCP) came to power in China, taking over the reins of governance. The new government faced significant challenges in the education system. In 1949, China's secondary schools had an enrollment of only 1.3 million, or about 2 percent of the relevant age group. Only 120,000 students were enrolled at the college level (0.3 percent of the age group) in a population that was then about 540 million (Pepper, 1990). Recognizing the urgency of addressing these issues, a National Conference on Education was promptly convened in December 1949, merely two months after the establishment of the People's Republic (Yearbook of Education in China, 1984).

The new government adopted the education pattern of the former Soviet Union, due to the Chinese new government established very close relations with the former Soviet Union. In 1952, a blueprint for restructuring and readjusting institutions of education was put into motion. In order to comply with the Soviet Union pattern, the existing higher education institutions (including the faculties, the curriculum and administrative structure) were restructured and each specialized according to the institutional organization of the various sector line agencies designed by the central government. According to the development needs of industrial sectors, new universities, colleges as well as faculties were set up by merging similar faculties and teaching staff from the different existing universities. After the reform, the higher education institutions could be categorized into comprehensive universities, engineering universities, agriculture & forestry universities, medicine universities, and teachers' colleges (Ministry of Education, 1994).

Up to 1954, through the reform and reintegration of 18 former agricultural colleges and universities and 30 agricultural departments and faculties, distributed throughout nonagricultural universities, 30 independent agricultural colleges and universities were founded at national and provincial levels. The former 182 agriculturally related professional areas and faculties were reduced and integrated into 124 professional spheres and faculties. Moreover, the regional distribution of the agricultural universities and colleges was also improved, which were primarily located in the coastal provinces before, through the structural reform and the establishment of new agricultural universities or colleges in the western provinces. During this period, the progress of secondary agricultural education and agricultural vocational education paralleled that of higher agricultural education. Before 1957, China's education system completed a transformation based on the "Soviet model", resulting in a certain degree of growth in the number of schools and the scale of enrollment (Ministry of Agriculture and Rural Affairs, 1999).

In 1966, the Cultural Revolution started, which turned a dark page on to the history of the development of China's education, especially higher education. Colleges and universities virtually ceased operation from 1966-1969, many were completely abolished or broken up through mergers or dispersals. The most of the higher agricultural education Institutions located in the cities were decentralized to remote rural areas (Kan, 1970). When colleges and universities reopened in 1970, the entrance examinations were abolished, the period of schooling for colleges and universities was shortened and the number of courses was reduced, course content was simplified and political study became more important than professional course work, administrators, institutional leadership was transferred from academic authorities to "revolutionary committees" composed of "workers, peasants and soldiers" (Kwong, 1988). The Cultural Revolution put a halt to the development of China's higher education, resulting in a lost generation of latent talents. Additionally, most of the teaching and research facilities were badly destroyed, and they could never be fully recovered for many years to come.

**Table 2.** Changes on Numbers of AE Institutions & Students in 1949-1978 (Ping, 2006).

Number/Year	Agricultural Universities & Colleges of Higher Education	Agricultural Schools of Secondary Education
1949	48	87
1952	33	140
1956	32	167
1958	93	477
1960	170	1,064
1962	68	182
1966	/	170
1978	55	302

**Rapid Development (1978-1999): Reform and Opening-up**

In 1978, China initiated the transformative "Reform and Opening-up" policy, setting the nation on a path of profound change and development. This policy aimed to achieve "socialist modernization" and establish a unique model known as "Socialism with Chinese Characteristics." As part of this vision, China embarked on the ambitious task of modernizing agriculture, industry, national defense, science, and technology (Ee art al, 2019). To meet the urgent need for a skilled and educated workforce capable of driving these modernizations, the Reform and Opening-up brought about a significant shift in the focus of education. It placed a key emphasis on nurturing higher-level professionals equipped to contribute effectively to China's development and progress. This educational transformation marked a crucial turning point in China's landscape and played a vital role in the nation's remarkable economic and technological growth (De Freitas, 2019).

Chinese higher education, after 1978 experienced the most extensive reforms, changes, and expansion in the areas of administration, faculty, students, curriculum, financing, graduate study and research, and international education exchanges. The reform process was initiated by the governmental line agencies and carried out through the following steps:

**Table 3.** The reform process was initiated by the governmental line agencies

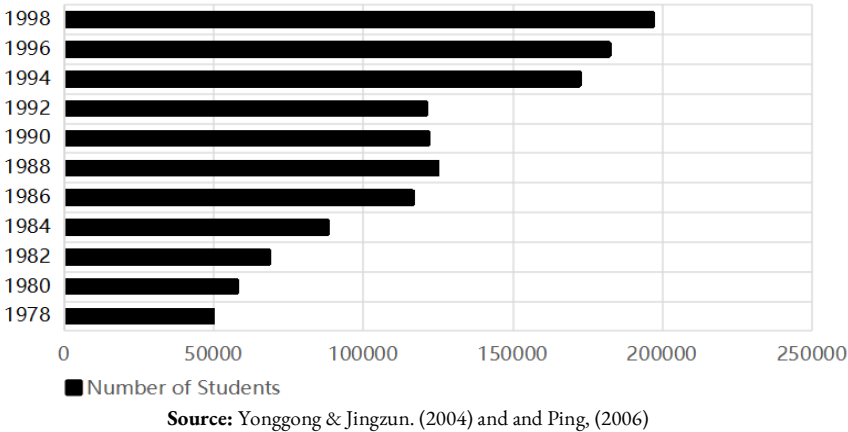
Year	Content	Responsible Department
Stage 1: the late 1980s	The identification of the problems	By HAEI and MOA
Stage 2: 1993	The formulation of the strategy	By MOA and MOE
Stage 3: 1993 to 1995	The initiation of the pilot reform	By pilot HAEI
Stage 4: 1996	Based on the pilot experiences, the formulated an action plan	By pilot HAEI, MOA and MOE
Stage 5: 1996 to 2000	The implementation of the reform	By HAEI, MOA, MOE,

	throughout the entire country	and the provincial government
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**HAEI:** Higher Agricultural Educational Institutions **MOA:** Ministry of Agriculture and Rural Affairs, PRC **MOE:** Ministry of Education, PRC

Student enrolment and graduate employment management are two important factors affecting the efficiency of the HAEIs. The market challenge to the planned HAE graduate employment scheme was the key initiator of the reform. Since the reform, a market demand-oriented student enrolment and graduate employment system has been established.

The main reform areas for student enrolment and graduate employment include: For student enrolment: the unification of the student enrolment categories. Before 1993, there were two types of students, namely governmentally-funded students and self-financed students. In 1993, the MOE conducted enrolment trials in certain universities, aiming at unifying the two enrolment categories. In the new enrolment scheme, both ‘planned’ and ‘unplanned’ students had to pay the same amount of tuition fee which covered 20-30 per cent of the total education expenses of the HAEI. In addition, in order to ensure the education of human resources for the poor western provinces, the government encouraged the HAEIs to enroll directly farmers with production experience as employment-orientated students (Yonggong and Jingzun. 2004). After graduation, these student had to return to their own regions to serve agricultural and rural development. Figure 1 show the increase and changes in the numbers of student enrollments in the higher agricultural education institutions.



**Figure 1.** Number of Student Enrollments in HAEI (Universities & Colleges) from 1978 to 1998

For Graduate employment: in 1995, the MOE reformed the graduate employment policy by changing the government guaranteed employment system to a market demand-oriented employment scheme. In the new employment scheme, students had to find jobs by themselves according to the market demand, with the assistance of the universities. On the other hand, employers could interview the candidates directly and recruit among the best. This put the graduates under greater pressure to gain qualifications during their four years of study which complied with the market demand. In the new graduate employment system, the universities have reinforced the promotion of and instruction on employment for graduates and give advice on the various functions in order to facilitate the finding of an appropriate job. The average employment rate immediately after graduation in the key agricultural universities is approximately 70-85 percent (Shen, Zhang, and Liu, 2022).

Discussions and Conclusions

In discussing the historical perspective on higher education, Perkin says: "if you want to know where you are going, it helps to know where you have been" (Perkin, 1984). It is true that one cannot understand the present in Chinese agricultural education without understanding the situation of modern agricultural education which has existed at different times in the past.

A historical review of the development of modern education in China reveals two crucial factors that have significantly influenced profound reforms in Chinese education. Firstly, the changing national political environment has played a pivotal role. Secondly, the imperative of national economic development has been instrumental in shaping

the course of these reforms. At the end of the 19th century, the Qing government embraced a modernized education system. Subsequently, proponents of national institutional reform engaged in negotiations with the Qing royal court, leading to changes in the governance and improvement of the educational system. However, this progress was later interrupted by an extended period of war, which stagnated the development of education.

In 1949, the People's Republic of China was founded under the comprehensive leadership of the Communist Party. Due to its close relationship with the former Soviet Union, modern agricultural education followed the Soviet model for a period. Nonetheless, escalating political struggles caused the education system to once again face setbacks. In 1978, new leaders came to power and initiated the policy of reform and opening up, allowing education to gradually return to its rightful place. Additionally, due to the nation's growing economic needs and the necessity to address food supply issues, agricultural higher education received significant support. Various departments collaborated to rapidly advance agricultural higher education during this period. In the last 20 years of the 20th century, agricultural higher education experienced a significant leap. At present, several Chinese universities have achieved prominent positions in the global rankings of universities with expertise in agriculture and forestry, with some institutions ranking within the top 100.

Yu (1974) characterizes China's developmental path as a spiral progression, wherein it goes through cycles of development, stagnation (or regression), and then development again. This pattern seems to apply to the history of modern education in China as well. Education, being an integral part of the overall society, also undergoes a similar spiral-like evolution, reflecting the pattern observed in China's recent developmental history. The focus of this study is to examine and analyze the development of Chinese modern agricultural education before the 21st century. Taking into account the demands of the 21st century, the rapid pace of change, and technological advancements. It seeks to investigate whether, after a period of rapid and upward development, China's agricultural education might once again encounter a historical phase of downward spiral development, warranting further investigation and analysis. Particularly in the context of agricultural education, institutions must align their management with the challenges posed by changing population demographics, including an aging society, shifting job preferences towards white-collar jobs, and technological advancements that influence the sector's development (Poungsuk and Junlek, 2021).

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