

Analysis of the Practice Model of General Education in Chinese Research-Oriented Universities: A Case Study of Hohai University

CAO Yilin

Hohai University, Nanjing, China

General education, proposed in the early 19th century, has gone through four stages of development in China: initiation during the late Qing Dynasty and Republican period (1898-1948), disappearance during the early years of People's Republic of China to the Cultural Revolution (1949-1977), resurgence from the Reform and Opening-up to the end of the 20th century (1978-1999), and comprehensive implementation since China's accession to the World Trade Organization (2000 to present). This study adopts a case study method, taking Hohai University as the research object, to discuss the practical model of general education in Chinese research-oriented universities. The 2024 Undergraduate Talent Training Program of Hohai University indicates that the current goal of general education at Hohai University is to cultivate talents with a "Chinese soul, global vision, and Hohai characteristics" who develop comprehensively in morality, intelligence, physical education, aesthetics, and labor. General education in Hohai University embodies six main features: a "general education plus specialty" curriculum system, the cross-integration of multidisciplinary majors, the supply of high-quality educational resources for general education courses, an international curriculum system, the reinforcement of practical teaching, innovation and entrepreneurship education, and the innovation of teaching evaluation. The framework of general education courses includes general education courses for broad categories of major, labor education, quality development, and innovation and entrepreneurship education.

Keywords: general education, Hohai University, The 2024 Undergraduate Talent Training Program

Introduction

There is an old Chinese saying, "All professions are inferior; only studying is noble", which reflects the transcendent status of education in China since ancient times. Due to the direct and even decisive impact of educational background on employment and career development in China, higher education is highly valued by students, parents, and society. However, precisely because of this, China's higher education has long been guided by a utilitarian, materialistic, and instrumental pursuit of value, which is particularly prominent in engineering colleges and universities, mainly manifested in the following issues.

Professionalism is emphasized over humanities. Many universities design their curricula and teaching arrangements based on a functionalist theory, regarding the cultivation of professional talents as the primary goal of higher education. Universities attach great importance to the instrumental nature of higher education but

neglect the humanistic spirit and cultural connotation that education carries. There is a lack of infiltration of humanistic spirit and literacy in the educational process, and there are significant deficiencies in moral education such as shaping students' values, cultivating moral character, and fostering international awareness, leading to a diminution of the humanistic attributes of higher education.

Knowledge is emphasized over critical thinking. In the teaching process of universities, both teachers and students are accustomed to the transmission and reception of knowledge and skills, but neglect the reflection and application of knowledge, as well as critical thinking about existing problems. As a result, there is a prevalent absence of critical thinking among students. Students are unable to achieve the leap from cognitive knowledge to conceptual thinking, from intuitive thinking to analytical thinking, and from conforming thinking to critical thinking (Wen & Si, 2018).

Single disciplines are emphasized over general education. The course content in universities is outdated, lacking interdisciplinary or cross-directional integration, and failing to reflect the comprehensiveness, cutting-edge nature, and interdisciplinarity of knowledge (Wen & Si, 2018). This issue of neglecting general education isolates disciplinary knowledge, artificially severing the connections between various disciplines, resulting in students being confined to narrow and single-minded ways of thinking and viewpoints. They lack a broad scope of knowledge and a multi-perspective thinking about problems, and are unable to possess a well-rounded knowledge structure or flexible problem-solving methods.

Fixed patterns are emphasized over innovation. The teaching content of university courses lacks distinctiveness, with a severe homogenization of teaching methods and a single form of instruction, neglecting students' individualized learning needs and characteristics. At the same time, with the widespread adoption of modern educational technology in various courses, students' knowledge discovery and growth have become overly reliant on information technology, leading to a lack of motivation for students to identify, pose, analyze, and solve problems. They also lack opportunities to build and develop their awareness of innovation, innovative thinking, innovative spirit, and innovative capabilities (Zhang, 2022). Pattern-based teaching hinders the cultivation of students' entrepreneurial and innovative character. Based on these issues, China's higher education has been exploring how to shift from a utilitarian, unitary, and short-sighted pursuit of value to a long-term and comprehensive one.

The Evolution of General Education in China

The term "general education" was proposed in the early 19th century, also known as "liberal education", "general studies", "liberal arts education", or "common education". Over the following 200 years, this concept has undergone continuous changes and developments, but its core idea remains clear. General education cultivates "individuals" rather than "workforce". It does not emphasize the value of specialized tools or commercial utility; instead, it stresses the breadth and integration of knowledge, as well as the completeness and interconnection of various kinds of knowledge. It attaches great importance to cultivating students' broad knowledge, open-mindedness, humanistic qualities, critical thinking skills, and creative dispositions.

General education in China has gone through four stages of development. The educational philosophy of Peking Imperial University, the first national comprehensive university established in modern Chinese history in 1898 (later renamed Peking University in 1912), can be regarded as the beginning of the idea of general education in China. The principle of "academic freedom and inclusiveness" advocated by Cai Yuanpei in the 1910s when he held the position of the president of Peking University served as the foundation for the implementation of

general education at the university. In the 1930s, Mei Yiqi, a renowned educator in China, advocated for comprehensive and broad-based general education during his tenure as the president of Tsinghua University. He established a general education curriculum system at Tsinghua that covered natural sciences, humanities, and social sciences. Influenced by the practices of general education at Peking University and Tsinghua University, the Nanjing Nationalist Government during the period of the Republic of China initiated corresponding legislative activities, formulating and publishing a list of common required courses for universities. This gave recognition and guarantee to the implementation of general education from a legal and institutional perspective, thus marking the initial promotion of general education in China.

In the early days of the People's Republic of China (the 1950s), the country's main task was to restore and develop production, and to carry out large-scale economic construction. Higher education in China embarked on a trend of learning from the Soviet Union, following the path of specialized institutes. General education was deemed impractical during this period and unable to meet the urgent need for professional and technical talents required for economic construction at that time, leading to its complete rejection. From 1966 to 1976, China went through the Cultural Revolution, during which higher education suffered significant damage. Normal teaching activities were hardly possible in schools, and general education disappeared without a trace.

After the end of the Cultural Revolution, with the restoration of the college entrance examination, China's higher education began to get back on track. In 1985, the Central Committee of the Communist Party of China proposed that the fundamental purpose of educational system reform was to improve the national quality (Central Committee of CPC, 1985). Starting from the 1990s, enhancing students' comprehensive qualities and strengthening quality education became the main direction of China's higher education. During this period, the idea of general education gradually gained attention from all parties, and higher education began to emphasize humanities education on the basis of professional education. A number of research-oriented universities carried out educational and teaching reforms to "downplay majors and strengthen skills" to varying degrees, and the reforms of their curriculum systems and content were closely related to general education.

Since 2000, with China's accession to the World Trade Organization, China began to integrate into the international community and participate in international affairs. Cultivating interdisciplinary and international talents became an important goal of higher education in the new era. Specifically, the talents cultivated by universities should have a global perspective, international awareness, and cross-cultural communication skills. They should be familiar with international rules and meet China's development needs for fulfilling international obligations and participating in global governance. Therefore, over the past 20 years, the concept of general education has been widely accepted and vigorously promoted by the higher education institutions in China. Led by research-oriented universities, China has embarked on active exploration of the theory and practice of general education on the basis of in-depth development of humanities education. The "Pleasant Reading Classics" plan of Nanjing University, which has been implemented for 15 years, is a successful case of multiple approaches to general education that emphasizes "wisdom promotion" (namely, discerning wisdom, insightful wisdom, and compassionate wisdom) (Gong, 2020). Wuhan University, Renmin University, and Fudan University have established a general education curriculum system that features "classic plus module study" (Wu & Liu, 2022). Tsinghua University reformed the traditional mechanics teaching methods and contents and thus developed a new model of mechanics general education in the course the "*force*" that changes the world (Shao & Du, 2023).

Research Methodology

This study adopts a case study method, taking Hohai University as the research object, to discuss the practice model of general education in Chinese research-oriented universities. Hohai University is a national key research-oriented university with a century-long history, directly under the Ministry of Education, featuring water conservancy, focusing on engineering, and promoting coordinated development across multiple disciplines. Hohai University is one of the 100 key higher education institutions in mainland China designated for priority development (known as the “211 Project”), and it has been selected for the list of Double First-Class Construction (refers to world-class universities and world-class disciplines). Therefore, the practice model of general education at Hohai University is representative and capable of reflecting the current situation, characteristics, and challenges of general education in Chinese research-oriented universities. The talent training program is the overall blueprint for achieving the goals, quality, and standards of talent cultivation in China’s higher education. It is a programmatic document for universities and colleges to organize teaching activities and manage the teaching process, and it embodies the overall educational philosophy, educational ideas, and school-running characteristics of a university or a college. Hohai University revises and publishes its talent training program every four years, which is implemented among all the undergraduate students in the university. This article will analyze The 2024 Undergraduate Talent Training Program of Hohai University (hereinafter referred to as The 2024 Program), focusing on the following research questions: (1) What are the talent cultivation objectives of the current general education at Hohai University? (2) What are the main characteristics of the current general education at Hohai University? (3) What is the curriculum structure of the current general education at Hohai University?

The Talent Cultivation Objectives of General Education at Hohai University

The newly released The 2024 Program embodies the core requirement of “Chinese characteristics, world-class standards”, with general education focusing on enhancing students’ sense of social responsibility, innovative spirit, and practical abilities, cultivating talents who possess “a Chinese soul, global vision, and Hohai characteristics” and achieve comprehensive development in morality, intelligence, physical education, aesthetics, and labor. Specifically, the connotation of “Chinese soul” includes guiding students to inherit the cultural tradition of water management for national prosperity, fostering a strong sense of patriotism, nurturing an enterprising character, and establishing the lofty ideal of serving the motherland and the people. The connotation of “global vision” includes improving the internationalization of talent cultivation, enhancing international competence, cultivating students’ noble ideals of embracing the world, and developing their abilities to understand diverse cultural backgrounds, engage in cross-cultural communication, and participate in international cooperation and competition. The connotation of “Hohai characteristics” mainly includes four aspects: (1) a sense of responsibility and dedication to the country and society; (2) an inclusive mindset that fosters academic exchange, eclecticism, and the absorption of diverse strengths; (3) a serious, meticulous, rigorous, and truth-seeking academic style in teaching and research; (4) an excellent work style that emphasizes practicality and action, adhering to the close integration of basic education, engineering education, and innovation and entrepreneurship education, forming a tradition of “broad-based knowledge, emphasis on practice, good academic ethics, and excellent moral character”.

The Characteristics of General Education at Hohai University

Equal emphasis is laid on both professionalism and humanities through the curriculum system of “general education plus specialty” to promote the cultivation of broad-based talents. Take the college English course, a

basic course offered to all the non-English major undergraduates across the university, as an example. A 2-credit English for Specific Purposes (ESP) course is introduced in the second semester of the sophomore year, establishing a wide network of connections between general education and various disciplines such as business, environmental studies, computer science, law, engineering, etc. ESP courses offered in Hohai University include: English for Water Resources Engineering, English for Civil Engineering, English for Electrical Engineering, English for Environmental Science and Engineering, English for Materials Science, English for Mechanical Engineering, English for Computer Science, English for Law, and English for Finance.

The integration of multidisciplinary and interdisciplinary fields is highly valued to cultivate students' macro perspective of system, engineering and quality. In Hohai University, water resources, environment, civil engineering, and information technology are among the advantageous disciplines. The 2024 Program stipulates that based on these advantageous disciplines, the integrated development with majors like accounting, sociology, and mathematics should be strengthened and the cultivation of versatile talents across different disciplines should be enhanced. It is recommended to explore the academy-based talent cultivation in some colleges. The implementation of general education and the integration of interdisciplinary knowledge address the issues of students' narrow knowledge base and limited thinking patterns.

It is specified in The 2024 Program that a series of high-quality courses in specialized general education should be developed to expand students' autonomy in course selection. The construction of course resources for physical education, aesthetic education, and labor education is in particular stressed. In accordance with the requirements of broad-based cultivation, it is required to develop a number of high-quality basic courses and increase the depth and breadth of specialized course learning to enhance students' comprehensive ability to solve complex problems. To achieve this end, each major should integrate with other engineering majors, integrate engineering with science, integrate liberal arts with science, integrate education with research, and integrate industry with education.

The cultivation of versatile talents is given top priority in The 2024 Program, which means that students should possess both engineering technology and management skills as well as language and cultural advantages. The college English course is taken as an example again. The ESP courses are jointly taught by the teachers from foreign language college and other colleges to equip students with both linguistic competence and specialized knowledge. Meanwhile, an internationalized curriculum system should be developed, with each major required to offer at least one internationalized course.

Since quality education was first proposed in the 1980s (Central Committee of CPC, 1985), it remains a focal point in higher education. According to The 2024 Program, practical teaching, innovation and entrepreneurship education are required to be integrated into the entire process of talent cultivation. Students are expected to develop their awareness and ability to understand, comprehend, and serve society through social practice projects and the integration of classroom learning and social practice. In the meanwhile, on-campus physical education, aesthetic education, and labor education should be combined with off-campus social practices to collaboratively enhance students' practical and innovative capabilities.

Three changes in teaching evaluation can be found in The 2024 Program. Unified and standardized evaluation is shifted towards personalized and diversified evaluation based on an online cloud-based evaluation system. Product-based evaluation is shifted towards process-based evaluation. A single evaluation system is shifted towards a comprehensive evaluation system. A new evaluation system based on Five Domains of

Education (morality, intelligence, physique, aesthetics, and labor) is implemented in Hohai University, which showcases students' comprehensive performance in academic development, practical experience, and moral character, forming an overall record of students' growth during their undergraduate years.

The Curriculum Structure of General Education at Hohai University

The curriculum structure of general education in The 2024 Program comprises three components: theoretical teaching, quality development, and innovation and entrepreneurship education, with general education permeating throughout the entire training system. The following sections will elaborate on the framework of general education courses for each component.

Theoretical teaching is primarily delivered through general education courses tailored to broad major categories, which consist of foundational courses, platform courses, and general elective courses, aiming to solidify students' basic knowledge, enhance the integration of scientific and humanistic spirits, and cultivate students' cognitive abilities, thinking skills, and critical thinking capabilities. They play a vital role in guiding students' values, nurturing their minds, and fostering a healthy personality. The general education system for broad categories of major is detailed in Table 1.

Table 1

The General Education System for Broad Categories of Major

	Categories	Subjects	Theoretical credits	Practice credits
General education courses tailored to major categories	Foundational courses	Politics	15	2
		Foreign languages	8	
		Military	2	2 (military training)
		Physical education	4	
	Platform courses	Mathematics	Self-determined	
		Physics		
		Information technology		
		Mechanics		
		Chemistry		
		Drafting		
		Measurement		
		Electronics		
	General elective courses	Writing	8	
		Artistic & aesthetic appreciation		
		Physical and mental health		
		Natural science		
		Social science		
		Innovation and entrepreneurship		
		Cross-cultural communication		
		Career planning		

Specifically, students are required to complete a total of 33 credits of foundational courses. Among them, 17 credits are for political courses (including two credits for practical courses), which mainly focus on moral education and political theoretical knowledge. Foreign language courses account for eight credits, with a requirement to integrate with professional education, emphasize applicability, reflect the connotation of

international education and the forefront of culture, and broaden students' international horizons. Military courses account for four credits (including two credits for military training), aiming to cultivate students' understanding of military strategic guidelines, and establish an overall national security perspective. Physical education courses account for four credits, focusing on improving students' physical fitness.

Platform courses aim to establish a broad and solid academic foundation, laying a strong basis for students' subsequent learning. These courses include modules such as mathematics, physics, mechanics, information technology, drafting, measurement, electrical and electronic engineering, with the credits determined by each college.

The required credits for general elective courses are eight, and students can freely choose from over 170 courses across eight categories, namely, writing and expression skills, artistic & aesthetic appreciation, physical and mental health, natural science, social science, innovation and entrepreneurship, cross-cultural communication, and career planning.

Quality development requires the completion of 10 credits, and students can choose freely from the following five categories of activities: (1) Social practice includes three subcategories: social practice during winter and summer vacations, entrepreneurial practice, and major-related practice. (2) Public welfare labor incorporates various service activities such as environmental beautification and rectification, promotion of civilized customs and behaviors, delivering warmth and love, maintenance of public order, event support and emergency rescue. Students must complete no less than 20 hours of public welfare labor practice. (3) Extracurricular activities are divided into four subcategories: humanities and social sciences, innovation and entrepreneurship, culture and art, as well as sports competitions. (4) Social work, honors, and skills training cover a wide range of activities. Students can undertake management roles in classes, Youth League branches, student organizations, clubs and participate in college art troupes, etiquette teams, and sports teams. They are encouraged to win honorary titles at the college, university, provincial, or national level, and obtain various professional skills and vocational qualification certificates. (5) Competition achievements consist of four subcategories: academic competitions, academic research, culture and art competitions, as well as sports competitions.

Innovation and entrepreneurship education comprises three parts: innovation and entrepreneurship courses, academic competitions, and college student innovation and entrepreneurship training programs. The framework of innovation and entrepreneurship courses is detailed in Table 2.

Table 2

The Framework for Cultivating Innovation and Entrepreneurship Abilities and the Nature of the Courses

Course modules	Categories of the courses	Nature of the courses
Innovation and entrepreneurship courses	General education courses on innovation and entrepreneurship	Elective
	Specialized courses on innovation and entrepreneurship	Compulsory
	Technological innovation	Elective
Academic competition	Scholarly works	Elective
	Exam-oriented expression	Elective
	Innovation training programs	Elective
Innovation and entrepreneurship Training for undergraduate students	Entrepreneurship training programs	Elective
	Entrepreneurship practice programs	Elective

The innovation and entrepreneurship courses comprise one-credit general education courses on innovation and entrepreneurship and two-credit specialized courses on innovation and entrepreneurship.

Hohai University recognizes over 280 academic competitions of three categories: technological innovation, scholarly works, and exam-oriented expression.

There are three forms of innovation and entrepreneurship training for undergraduate students. (1) In innovation training programs, individual undergraduate students or teams, under the guidance of mentors, independently complete innovative research project design, research preparation, project implementation, research report writing, and achievement exchange. (2) In entrepreneurship training programs, undergraduate student teams, under the guidance of mentors, with each student in the team playing one or more specific roles during the project implementation process, complete tasks such as business plan preparation, feasibility studies, simulated enterprise operation, and entrepreneurship report writing. (3) In entrepreneurship practice programs, undergraduate student teams, under the joint guidance of school mentors and enterprise mentors, utilize the results of innovation training programs or innovative experiments to propose innovative products or services with market prospects, and carry out entrepreneurial practice activities.

Conclusion

Through comprehensive top-level design of the talent cultivation system, Hohai University has strengthened the status and role of general education in the undergraduate education and teaching process. This innovative undergraduate education model, which combines general education with personalized cultivation, helps stimulate students' interest in happy learning, enhances their ability to learn proactively, and provides them with more autonomy and space for development in their professional studies. Especially through the study of general education courses that break down disciplinary barriers and boundaries, students begin to develop critical thinking and initially form a scientific value judgment system. In a certain sense, undergraduate students can receive interdisciplinary, cross-major, and cross-field common education without leaving their college. In this process, students experience collaborative learning with classmates from different disciplinary backgrounds, promoting them to understand the world, analyze problems, and utilize their talents from a higher and broader perspective. They also develop their abilities in academic norms, oral and written expression, teamwork, organization and management, communication and coordination, among other aspects.

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