

Seeking Appropriate Modes of Undergraduate Education¹

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Abstract

Over the past two decades, Chinese universities have been promoting the reform of general education, and have developed an educational mode combining both general and professional education. By reviewing and reflecting on the educational reform process of Chinese universities, we attempt to reveal its inner logic and inevitability. The reform of undergraduate education in Chinese universities has a long way to go, and we hope that this reflection and understanding will enable us to develop a clear vision for the future of educational reform.

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The mode of teaching and learning has always been the core issue regarding the reform of higher education. Universities in China mainly focused on professional education, and after the country's Reform and Opening up, the limitations and shortcomings of professional education turned noticeable and the American model of liberal arts education began to be introduced to transform China's higher education system. However, it was soon discovered that there were some inherent contradictions between general education and the professionalization tendency of universities and faculty, as well as the construction of world class research universities, which prompted people to consider the education mode suitable for the actual situation of their respective institutions.

Seeking an education mode should first consider the needs of students and the education mission of university. Peking University has been a community, where premier Chinese students has gathered to study. The university aims at fostering outstanding scholars and leadership talents from a variety of disciplines, which becomes a solid foundation for establishing a talent-cultivation mode. Second, research universities committed to undertaking multiple social functions such as talent cultivation, academic research and social services, involving faculties, administrative

departments, student affairs office, teachers, students, and many other bodies. In such an exceptionally complex system, the interests of various groups are not entirely consistent and sometimes conflict with each other (Kerr, 2001/2019). Undergraduate education involves all aspects of the university and requires coordination and coherence among all parties for effective implementation; therefore, the appropriate educational mode is often not idealized, but agreed upon. Moreover, due to the fact that each mode has its own characteristics as well as historical and social origins, the mode that is appropriate for one university may inappropriate for another, and the selection of educational mode should take into account the university's characteristics and status quo.

The mode of general education

General education (or liberal arts education) is a widely acclaimed educational mode that originated from ancient Greece and Rome, and flourished in the United States. General education upholds that the education is of the whole person, that is, to nurture human talents and develop the ability to think and understand independently so that people can use their brains freely without being affected by utilities (Levin, 2003/2004). There are not

many universities that fully practice liberal arts education, mainly the liberal arts colleges and private research universities in the United States. The undergraduate education in these universities is usually small in scale, with close relationships between faculty members and students, and is based on heuristic education, focusing on students' interests and development. This has many similarities to traditional Chinese education, such as focusing on the study of classical texts, moral cultivation, and promoting dialogue between teachers and students to inspire students, etc.

Many prominent scholars received a liberal arts education early in their careers. Roald Hoffmann, for instance, is a renowned chemist and Nobel Prize winner in 1981. He received his B.A. in art from Columbia University and then his M.A. from Harvard University before switching his research interest to chemistry. Professor Hoffmann not only has a deep knowledge of theoretical chemistry, but has also published two books of poetry. His academic papers are beautifully written, and his profound quantum chemistry writing blends with a strong artistic style that one never tires of reading. Another example, famous physicist Edward Witten studied history as an undergraduate, then transferred majors several times before finally choosing physics, but notably, one

of his major awards was the Fields Medal in mathematics (Yang, 2014). Some of the Chinese scholars in the early period, such as Hou Depeng, Wang Guowei, Chen Yinke, Hu Shih, Zhu Kezhen, as well as Liang Sicheng, Chen Jiankong, Su Buqing, Hua Luogeng, Li Siguang, Qian Xuesen, Tsung-Dao Lee, Chen-Ning Yang, and Shing-Tung Yau, had similar experiences. They first received traditional Chinese education, and then they received modern higher education at home or abroad. This "mixed type" of education experience had a subtle influence on their later academic career.

China is a large human resource country, and if it wants to become a strong human resource country, it should have a large number of outstanding talents in addition to improving the literacy of all people. In 2005, during a conversation with then Premier Wen Jiabao, Mr. Qian Xuesen raised the famous "Qian Xuesen's question". Qian commented, "Among the students we have trained over the years, none of their academic achievements can be compared with those of the masters trained during the time of the Republic of China." Qian's question is worthy of our reflection. In the past 20 years, China has greatly increased its investment in higher education and academic research, and the progress is not small, but of course there

is still a long way to meet the expectations of the nation. However, the growth of talents is not as simple as “reaping what you sow”. With more patience, we should lay a good foundation for cultivating talents, especially with good humanistic qualities and a broad academic vision, in order to go further on their academic paths. As the saying goes “Haste makes waste,” haste will ruin the future of young students.

General education is not perfect. The small size and high cost of education have doomed liberal studies to an elite education. With the emphasis on academic research in recent years, the teaching-oriented liberal arts colleges have come under considerable pressure. Coupled with the fact that students increasingly favor popular professional education for employment reasons, some small liberal arts colleges are in a predicament due to lack of students. The situation in China is very different. Our main problem is that our education mode is homogeneous, with a professional education based on knowledge transfer and a culture of test-taking that constrains human creativity. As a large country, a diversified higher education system should be established, with both mass professional, vocational education and small liberal education to train elites, in order to meet the different educational needs of the country and society.

In recent years, some joint-venture universities in China have established general education, such as New York University Shanghai, the Chinese University of Hong Kong, Shenzhen, Duke Kunshan University, and Beijing Normal University-Hong Kong Baptist University United International College. They have adopted the educational models from the parent universities abroad, and with the support of their resources and strengths, these universities have formed a very distinctive liberal arts education model by taking root in the actual situation in China. Despite the high tuition fees, these universities are sought after by many students.

The reform of general education in domestic universities began at the beginning of this century. Over the course of creating world-class universities, some universities recognized the problems and limitations of professional education and began to adopt general education. Yuanpei College at Peking University, Fudan College of Fudan University, and the reform of 3-3 system of Nanjing University² have all promoted

²The process of undergraduate education of Nanjing University consists of the three phases: broad-based education, professional education, and multifaceted education. The university's talent cultivation mode focuses on nurturing academic talents, interdisciplinary talents, and entrepreneurial talents.

the reform of undergraduate education in different ways. But in essence, there are certain contradictions and conflicts about value orientation between general education and research universities. The focus of general education is on students, while the focus of a first-class research university is on academics. Moreover, teachers' pursuit of personal academic careers and their preference for professional teaching have influenced the reform process of general education. The question we need to ponder is: in the environment of strong professional education tradition and fierce academic competition, what kind of education mode should be adopted to gather consensus and smoothly reform the undergraduate education?

The mode of professional education

The current education system in China was adopted in the early 1950s with reference to the Soviet model. A distinctive feature of this mode was robust planning and management. When students entered the university, their majors and pathways had been already determined, and the curriculum as well as practical training had also been arranged in line with the requirements of future jobs. After graduation, students were assigned to jobs that corresponded to their majors according to the plan. In early

1978, I received a letter of admission to Peking University. The major read "Rare Metals" in the Department of Chemistry. I did not understand what "rare metals" were at that time, and it seems that there may not be many people understanding it even now. The background of this education model was that China was in urgent need for a large number of professional and technical talents for industrialization. In this sense, it was a very successful educational mode, but obviously this education mode cannot adapt to the market economy and the development needs of the country after the Reform and Opening up. In addition, a complete disregard for individual will is unlikely to arouse the full potential in people. Over the past four decades, China's university education has been undergoing reform. After several significant adjustments, undergraduate education has basically reversed the problem of overly narrow major settings. In order to improve humanistic literacy and critical thinking skills, many engineering colleges and universities have strengthened quality education, and comprehensive universities have also carried out reforms in liberal education. However, on the whole, the professional education model of Chinese universities, which focuses on knowledge transmission, has not fundamentally changed.

There have been many criticisms of the traditional professional education model. For example, determining students' majors without sufficient consideration and preparation is not in line with the law of human growth, but also makes some students fall into confusion because they lose their interest. Focusing on professional knowledge and classroom lectures, students' assessment is also mainly based on examination results and ranking, and not enough attention is paid to students' learning experience and personal development. Students do not master to review what they learn in a historical view and with critical thinking skills, and further, their imagination and creativity are limited by the over emphasis on the system and completion of professional knowledge. As a whole, traditional professional education focuses on knowledge rather than people, while the root of education is precisely the growth of people. The problems with traditional professional education are even greater when viewed from the perspective of cultivating outstanding scholars and leaders. Humanity and social science literacy, critical and creative thinking, teamwork and leadership skills, and so on, are all aspects that professional education neglects. Narrow and rigid modes of thinking often cause people to go with the flow and lose their independent will and judgment when they encoun-

ter complex problems in a changing world.

The problems and drawbacks of traditional professional education are not all inherent to professional education, but many are due to the way of education. In fact, early university education in China, such as early Peking University, Tsinghua University and the National Southwest Associated University, was highly specialized but produced many outstanding talents. When the college entrance examination was just restored in China, Peking University also employed a traditional professional education. At that time, the conditions of the university were very poor, and there were not even textbooks. From freshman year, we used mimeographed lecture notes, and it was not until senior year that we used the only officially published textbook, *Structural Chemistry*. I can recall that the second-year organic chemistry teacher was Mr. Zhang Bang, a graduate from the University of Cambridge. In every class, we were given a mimeographed syllabus. Mr. Zhang engraved his own steel plates, his handwriting was neat and elegant, and his lectures were well prepared and organized, making him quite a gentleman. The students were quick to take notes in class, absorbing as much knowledge as possible. At the end of class, we flocked to the podium to ask the teacher questions we didn't understand. In the evening, when

we returned to the dormitory, there were more discussions. The discussions among students were not intentionally organized or arranged, but were completely spontaneous. In the era when study materials were scarce, everyone benefited greatly from the discussions.

In fact, discussions between students and faculty members and among peers have always been an effective way of university education. In ancient Greek and Roman times, eloquence was a highly prized literacy. In medieval Europe, university education was mainly about leading students to annotate and expound Christian doctrine and ancient Greek classics through debate and discernment (De Ridder-Symoens, 2003/2008). Even in the professional education model, such discussions and debates are useful to guide students, to analyze, contemplate and question the theories and schools of thought studied from different perspectives, and to draw nourishment through criticism. I remember that the students often argued so much, even to the teacher, that the teacher often had to go back to the data before answering. Despite the poor level of research and experimental conditions at that time, with little decent instrumentation, the students were very enthusiastic in their studies and a group of very good academic talents and industry leaders grew up.

Education is a process of mental liberation and self-growth that is highly subjective and uncertain. Someone once made this analogy: “Education is like injecting ideas and concepts into the subconscious mailbox of human beings; you know when you should put them into the mailbox, but you never know when and in what way it will be received.” Obviously, education is a two-way process; the knowledge given by the teacher is only truly complete when the student accepts it, digests it, and is able to apply and solve practical problems. The main problem with traditional professional education is the disregard for the student’s leadership and motivation to learn, and this is what really needs to change.

Combining professional education with general education

More than 20 years ago, Peking University established a undergraduate strategy research group, whose members were all very active young and middle-aged scholars on the front line, with the task of proposing a reform plan for undergraduate education at Peking University. This undergraduate strategy research group spent nearly a year studying and comparing undergraduate education in countries around the world and came up with a report on undergraduate education reform. The report

made a basic judgment: for Peking University students, undergraduate education is no longer the ultimate education, most students will go on to graduate schools, systematic professional education should be completed at the postgraduate stage, and general education should be implemented at the undergraduate level. The specific recommendations made in the report were to employ general education in the early years, broad-caliber professional education in the senior years, free elective courses and free choice of majors throughout the university, and the credit system. The university agreed in principle with the report's recommendations, but disagreements arose over how to implement them. The foundation of undergraduate education at Peking University is the professional faculties, and the faculties are responsible for teaching programs, teaching management and student management. Following the report's recommendations would require a reorganization of the teaching and student management system, the complexity and possible risks of which were prohibitive. The university finally decided to set up a small-scale educational reform experiment to partially pilot the reform program, which was the origin of the Yuanpei Program and the Yuanpei College.

The Yuanpei Program has been im-

plemented for nearly 20 years so far, and despite the many difficulties encountered, the main goals of Yuanpei College's educational reform have basically been achieved. At the same time, the University has established a system of general elective courses and a core curriculum for general education, which has expanded students' academic horizons. The University has also created dozens of interdisciplinary programs in order to break the fetters imposed by majors on students' ways of thinking. For example, Classical Philology, established jointly by the department of Chinese literature, History and Philosophy, starts from classical languages and classical texts, laying a solid foundation for students to understand and explore the history and culture of the East and the West. Another example is the Paleontology major established by Yuanpei College. Under the guidance of teachers, students dig deep into the practical field study and take interdisciplinary geology and biology courses, quickly integrating into the most cutting-edge academic research. Based on the previous reforms, in 2015, Peking University implemented a university-wide system of free course selection and free transfer of majors, while also decreasing the required credits for majors in each faculty and establishing a core major curriculum to provide institutional safeguards for

students' interdisciplinary learning.

These reform measures of Peking University have, to a certain extent, alleviated the drawbacks of the traditional professional education which is too rigid in management and too narrow in academic vision. What Yuanpei College students feel most is "making choices". In their first few years at the College, students have to take or audit many courses, understand the content of each major, and discuss the limitations and future prospects of each major with teachers and classmates. This is a confusing and dilemmatic process that forces them to think outside the box, to see and experience all majors and various kinds of knowledge, but the interdisciplinary mindset they develop will benefit them for the rest of their lives. The freedom to select courses across the university pushes students to think deeply and choose carefully their future paths in life. A medical English major student at the Medical Center, who had always been interested in chemistry, took chemistry courses while pursuing the medical English major. This student joined a group in the School of Chemistry to conduct research, and was accepted as a PhD student in chemistry at both the University of Chicago and Yale University upon graduation. Students learned to observe and explore key issues in society

and the world with a broader academic perspective through some dozens of interdisciplinary programs in thought and society, politics, economics and philosophy, heritage conservation technology, foreign languages and history, in addition to environment and health. Although the educational reform at Peking University is still preliminary, the creative enthusiasm of the faculty and the tremendous energy unleashed by the students give us confidence and high expectations in the reform of undergraduate education.

Peking University has not completely implemented general education, but has transformed traditional professional education by drawing on the ideology and philosophy of general education, thus it can be called an educational mode of "combining general education and professional education". There are many subjective and objective factors why Peking University embarked on this path. For example, the internal and external institutional environment and management constraints make large-scale management restructuring difficult, and only partial or gradual reforms can be adopted. Full implementation of general education also requires more ideological and conceptual preparations due to the tremendous pressure of academic research on teachers and their preference for professional education. Moreover, gen-

eral education requires the University and faculty to focus on students' growth, which is somewhat in conflict with other functions of research universities. The past 20 years has been a critical period for faculty recruiting, personnel system reform and discipline restructuring, and the University needs to balance the interests of all parties to keep the reform smooth and well-adjusted. In terms of the direction of reform, Peking University has always been moving toward general education, which is crucial to achieving its talent cultivation goals. However, I believe that for a certain period of time, the university should maintain the educational mode of "combining general and professional education" and focus on breaking through the various bottlenecks that hinder the liberation of students' minds. In other words, instead of pursuing ideals and fabulous external forms, we should be more pragmatic in solving practical problems.

Undergraduate education reform is a long and complex process. Two decades has passed and it is time for summary and reflection. First, the essence of university education is to liberate the intellectual minds of students. At Peking University, we are delighted to see the great creative potential in students, despite the problems and drawbacks of traditional professional education. When we confine students to

a narrow range of majors, when we force them to accept ready-made ideas and conclusions, we are hurting their creative potential and the future competitiveness of our country. Our insistence on the reform direction of general education is not to dispense with majors, but to liberate students' intellectual minds and awaken their inner creative passions by fostering independent, critical thinking skills and the ability to create freely in their minds (Barnett, 1990/2012). Second, faculty members are the key and leading force of educational reform, and any effective educational reform requires broad consensus and active participation of them. In research-oriented universities, faculty members' concern for personal academic career and their preference for teaching courses of their specialties are objective realities that do not depend on our will. But at Peking University, we see the expectations and passion of faculty members for educational reform, and their carefulness and rigor to impart knowledge, teach, and solve problems. We must trust teachers and return the dominance of education to them. Only trust can inspire the inner passion of teachers, and only trust can awaken their sense of glory of nurturing talents, so that they can devote themselves to the tide of education reform without distraction.

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