

Strengthening Patriotic Beliefs in Curriculum Ideology and Politics

-- A Case Study of General Cheng Kaijia, the First Recipient of China's Six Major Honors

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Abstract

As the first Chinese person to have received six prestigious awards simultaneously, Mr. Cheng Ka-ha truly valued neither fame nor wealth. With a pure heart, he dedicated himself to serving his country. From Mr. Cheng, we can feel an extremely profound sense of patriotism and a spirit of dedication. From such spiritual wealth, we can extract elements for curriculum-based ideological and political education. Curriculum-based ideological and political education is essentially an educational approach aimed at achieving moral education and nurturing individuals. In Chinese education, "nurturing individuals" comes first, emphasizing the organic unity of imparting knowledge, teaching skills, and resolving doubts, as well as teaching and nurturing. The main form of curriculum-based ideological and political education is to integrate the elements of ideological and political education, including theoretical knowledge, values, and spiritual pursuits, into each course, exerting a subtle influence on students' thoughts and behaviors.

Keywords

Cheng Kaijia; Zheng Qiang; Course ideological and political; To foster virtue through education.

1. Introduction

In 2020, Professor Zheng Qiang, then the Party Secretary of Taiyuan University of Technology, posed a question in two reports: "China has six great honors: Academician of the Chinese Academy of Sciences, National Highest Science and Technology Award, "Two Bombs, One Satellite" Meritorious Award, August 1st Medal, the title of "Pioneer of Reform," and the national honorary title of "People's Scientist." There are fewer than 1,000 living recipients of these honors in total. It is no small feat to receive even one of these honors. However, historically, there was a scientist who held all six of these honors. Who is he?" Professor Zheng Qiang revealed that this person is the Chinese physicist Cheng Kaijia (Figure 1). Professor Zheng Qiang stated, "When you are with noble people, you will become noble. When you are with these great historical figures, you will feel small." [1-3]

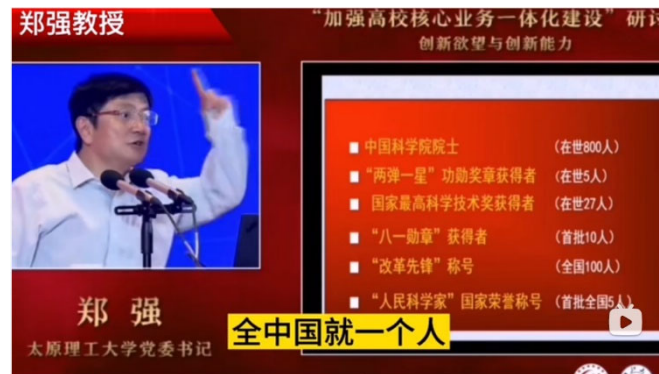


Figure 1. Representative Figure of Ideological and Political Education in Universities— Professor Zheng Qiang

2. The Life Achievements of Mr. Cheng Kaijia

Cheng Kaijia (August 3, 1918–November 17, 2018) was an Academician of the Chinese Academy of Sciences, a renowned theoretical physicist, a recipient of the “Two Bombs, One Satellite” Meritorious Medal, the 2013 National Highest Science and Technology Award, one of the pioneers of China’s nuclear weapons program, and one of the founders of China’s nuclear testing scientific and technological system. He also served as a consultant to the Science and Technology Commission of the General Armament Department of the People’s Liberation Army (Figure 2)[4].



Figure 2. General/Academician Cheng Kaijia

Born in Wujiang, Jiangsu Province, in August 1918, Cheng Kaijia graduated from the Department of Physics at Zhejiang University in 1941 and obtained his PhD in philosophy from

the University of Edinburgh in the United Kingdom in 1948. He was elected as an Academician of the Chinese Academy of Sciences in 1980. He successively held positions as a professor at Zhejiang University and Nanjing University, deputy director of the Nuclear Weapons Research Institute of the Second Ministry of Mechanical Industry, deputy director and director of the Nuclear Test Base Institute of the Commission of Science, Technology, and Industry for National Defense, and a senior consultant to the Science and Technology Commission of the Commission of Science, Technology, and Industry for National Defense (General Armament Department).

Cheng Kaijia was one of the pioneers of China's nuclear weapons research and made outstanding contributions to the development and testing of nuclear weapons. He initiated and led the research in the new field of radiation resistance and was one of the pioneers of the new field of high-power microwave research in China. He published the first Chinese textbook on solid-state physics, proposed a universal theory of thermodynamic internal dissipation, derived the Dirac equation, and put forward and developed the two-band model of superconductivity and the TFDC electron theory of condensed matter.

In 1985, he was awarded the "Special Prize of National Science and Technology Progress Award";

In 1999, he was awarded the "Two Bombs, One Satellite Meritorious Medal";

In 2014, he was awarded the 2013 "National Highest Science and Technology Award";

In 2017, he was awarded the "August 1st Medal";

In 2018, he was awarded the "Lifetime Achievement Award" at the "World is Beautiful Because of You - 2017-2018 Influential Chinese in the World" ceremony;

In 2018, he was awarded the title of "Pioneer of Reform" and was recognized as a pioneer in the nuclear weapons program;

In 2019, he was awarded the honor of "Touching China 2018 Person of the Year";

In 2019, he was awarded the "National Model of Professional Dedication" and the national honorary title of "People's Scientist" as the 7th National Moral Model;

In 2019, he was selected as one of the "70 People in 70 Years of Chinese Returnees."

Cheng Kaijia was already an academic talent in physics in his youth. After graduating in 1941, he stayed at the Department of Physics at Zhejiang University as a teaching assistant and began to study relativity and elementary particles. In August 1946, Cheng Kaijia went to the University of Edinburgh in the United Kingdom for further study, where he was mentored by M. Born, a physicist known as the "physicist of physicists" and one of the founders of quantum mechanics, who was awarded the Nobel Prize in Physics in 1954 for his fundamental research in quantum mechanics (Figure 3).



Figure 3. Cheng Kaijia with Born and Others

During his four years with Born, Cheng Kaijia met physics giants such as Dirac, Heitler, Schrödinger, Møller, and Powell. He and his mentor jointly proposed the “two-band model of superconductivity.” In 1944, at the age of only 26, Cheng Kaijia wrote a paper titled “Weak Interaction Requires a Meson with a Mass of 205 Protons.” The British scholar Joseph Needham personally revised it and sent it to the renowned physicist Dirac, but it was not published due to Dirac’s judgment that “heavy mesons are not needed.” However, in 1979, the Nobel Prize in Physics was awarded to Sheldon L. Glashow of the Lyman Laboratory at Harvard University in Cambridge, Massachusetts, Abdus Salam of Imperial College of Science and Technology in London, England, and Steven Weinberg of Harvard University in Cambridge, Massachusetts, in recognition of their contributions to the development of the theory of weak interaction between fundamental particles, especially the prediction of the weak neutral current. It can be said that Cheng Kaijia “missed” the Nobel Prize by a hair [5].

However, in the nuclear research field that he dedicated his life to, he published no papers, and only his name can be seen on the textbook “Solid State Physics” (Figure 4). The reason is that after returning to China, he devoted himself to the highly confidential nuclear weapons program, which led to the little-known result, to the extent that many scholars and leaders who attended Zheng Qiang’s report were unaware of it.

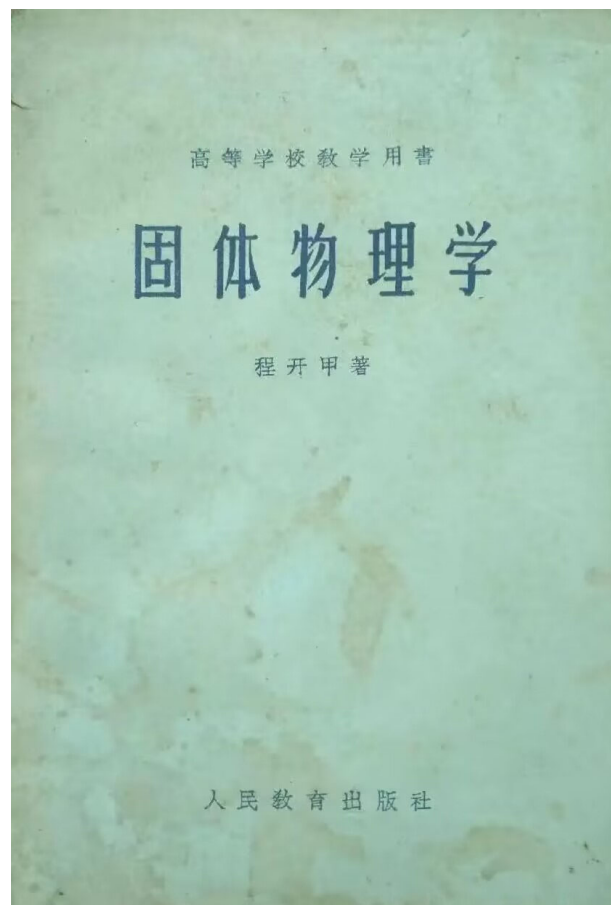


Figure 4. The Cover of the Textbook Authored by Cheng Kaijia (Physical Image)

In August 1950, Cheng Kaijia returned to China from the United Kingdom and took up a teaching position at the Department of Physics, Zhejiang University. During the nationwide adjustment of faculties and departments in higher education institutions in 1952, Cheng Kaijia was transferred to the Department of Physics at Nanjing University. In 1958, Cheng Kaijia, together with Shi Shiyuan, established the Nuclear Physics Teaching and Research Section at Nanjing

University and was assigned the task of creating the Jiangsu Institute of Atomic Energy. During this period, he developed a double-focusing β -spectrometer and a linear accelerator, making significant contributions to the establishment and development of the nuclear physics program at Nanjing University. In 1960, Cheng Kaijia was appointed as the deputy director of the Ninth Institute of the Second Ministry of Mechanical Industry (the predecessor of the Chinese Academy of Engineering Physics) and participated in the development of the atomic bomb, in charge of theoretical research on the equation of state and research on explosion physics. In the summer of 1962, with the goal of conducting the first atomic bomb test within two years, Cheng Kaijia was transferred to the Commission of Science, Technology, and Industry for National Defense (later the Commission of Science, Technology, and Industry for National Defense, now the General Armament Department), where he served as the deputy director and director of the Nuclear Test Base Institute. On the morning of September 7, 2022, the commemorative stamps titled "Modern Chinese Scientists (Series Nine)" were officially launched. This set of four commemorative stamps includes the 4-2 stamp featuring "Physicist Cheng Kaijia." The stamp primarily features a frontal portrait of Academician Cheng Kaijia, with background images of the test tower during the explosion of China's first atomic bomb and his representative works (Figure 5). Academician Cheng Kaijia's life was characterized by a lack of concern for fame and fortune, deeply embedding his patriotic spirit into the land of China and the cause to which he dedicated himself. Such achievements deserve to be remembered by us. For the ideological and political education in courses that has been frequently mentioned by the Party and the state in recent years, the story of Mr. Cheng is undoubtedly the best teaching material for ideological and political education.



Figure 5. Commemorative Stamps of "Modern Chinese Scientists (Series Nine)"

3. Integrating Ideological and Political Education with Patriotism and Moral Cultivation

Since 2014, Shanghai has gradually explored and developed the concept of "curriculum-based ideological and political education", offering a series of "China-themed" courses such as "Grand Strategies of a Great Nation". At the same time, several universities have been selected for pilot projects to explore ideological and political educational resources in professional courses. We recognize that strengthening ideological and political education in colleges and universities must start from the essential requirements of "cultivating virtue and fostering talent" in higher education and the strategic height of national ideology. Relying solely on the construction of "ideological and political courses" is not enough. We must grasp the core links of curriculum reform, give full play to the main channel role of classroom teaching in talent cultivation, and strive to integrate ideological and political education throughout the entire process of school

education and teaching. Curriculum-based ideological and political education should promote the close integration of teaching and nurturing through the main channel of classroom teaching, deeply explore ideological and political educational resources in all types of courses, give full play to the nurturing function of all courses, and implement the nurturing responsibility of all teachers. Curriculum-based ideological and political education is essentially still an educational work aimed at achieving moral cultivation and nurturing. "Nurturing" begins with "cultivating virtue", emphasizing the organic unity of imparting knowledge, answering questions and cultivating talents, which has always been an excellent tradition of Chinese education. "Ideological and political education is nurturing work, addressing the questions of 'what kind of people to cultivate' and 'how to cultivate them'. This is an excellent tradition of the Party and the country, and also the lifeline of all work." Curriculum-based ideological and political education always adheres to cultivating virtue and fostering talent, establishing oneself with virtue, establishing learning with virtue, and teaching with virtue. It focuses on strengthening students' education on worldviews, outlooks on life, and values, inheriting and innovating excellent traditional Chinese culture, and actively guiding contemporary students to establish correct views on the country, the nation, history, and culture, thereby cultivating more high-quality talents with all-round development in morality, intelligence, physical fitness, aesthetics, and labor for society, and cultivating qualified builders and reliable successors for the cause of socialism with Chinese characteristics. [6]

The introduction of ideological and political education in courses is aimed at achieving coordinated development between various courses and ideological and political theory courses, realizing collaborative education. Whether it is "all-round" education or "ten-aspect" education, what is reflected is precisely the concept of collaborative education. As the educational policy of our Party and the common mission of schools at all levels and of all types, the ability to continuously cultivate qualified builders and reliable successors for the cause of socialism with Chinese characteristics and the ability to gather, cultivate, and deliver talents for the realization of the Chinese Dream of the great rejuvenation of the Chinese nation are the most important indicators for measuring the educational level of a school. World-class universities all grow and develop by serving the development of their own countries. "As long as we achieve accomplishments and make contributions in cultivating the builders and successors of socialism, our universities will have a position and a voice in the world." [7]

Course-based ideological education implies a transformation of the educational structure, integrating knowledge imparting, value formation, and ability cultivation. In actual course teaching, due to various reasons, these three aspects are often separated. In a sense, course-based ideological education is a return to the reintegration of these three elements. It requires teachers to actively explore ways to truly integrate into students' daily lives, combine teaching with their current life experiences and spiritual dilemmas, and consciously respond to the real problems and confusions they encounter in learning, life, social interaction, and practice, truly touching upon the deep layer of their tacit knowledge, that is, the implicit foundation of their cognition and practice, thereby exerting a positive influence on them.

The fundamental issue of talent cultivation lies in determining what kind of people to cultivate, how to cultivate them, and for whom to cultivate them. Although beneficial practices from abroad can serve as references, education must be based on China's national conditions and adhere to the socialist orientation of educational institutions. The talent cultivation system includes teaching, courses, disciplines, and management systems, all of which are interconnected through the framework of ideological and political education. Course-based ideological education aims to build such an educational blueprint through deepening the reform of course objectives, content, structure, and methods. It combines the orientation of ideological and political education - including political identity, national consciousness, cultural confidence, and moral cultivation - with the inherent knowledge and skills teaching of various

courses, achieving the organic unity of explicit education and implicit education. This approach promotes the free and all-round development of students and fully realizes the educational function of teaching. [8]

4. The Role Model of Mr. Cheng Kaijia and the Integration of Ideological and Political Education

“Camping for thousands of miles without cities or walls, with snow and rain falling continuously over the vast desert.” Mr. Cheng Kaijia went abroad to study in his youth, devoted himself to his studies, and began to show his talent in the field of physics. In middle age, he returned to his motherland with a heart full of patriotism, unafraid of hardships and difficulties, and became a mainstay of the “Two Bombs, One Satellite” project. His life was dedicated to the country and the nation, and he concealed his achievements. As educators in higher education institutions, we should remember such role models, integrate the spirit of the nation into our blood, and pass it on to generation after generation of young people. While teaching scientific and cultural knowledge, we should truly achieve the fundamental purpose of “cultivating people” in education. “Cultivating people” has long been mentioned and emphasized by President Xi Jinping. After the National Conference on Ideological and Political Work in Higher Education Institutions, President Xi Jinping has made several important statements on education. Guided by these ideas, the ideological education in university courses has been fully implemented, further improving the “all-round” education mechanism of universities. The ideological education in courses is rich in content. It requires integrating elements of ideological and political education, including theoretical knowledge, values and spiritual pursuits of ideological and political education, into various courses, thereby subtly influencing students' thoughts and behaviors. It is worth mentioning that currently, many university teachers' teaching of ideological and political education in courses seems somewhat weak and ineffective, and sometimes they are even troubled. How to improve such capabilities? The reports and techniques of ideological and political education in courses by Teacher Zheng Qiang may provide us with some ideas. Teacher Zheng has integrated a large amount of information and elements of ideological and political education into his courses and various reports through years of exploration and practice, pioneering a new path for better implementation of ideological and political education. The reason for the emergence of the Zheng Qiang phenomenon is that his ideological and political education in courses can grasp this core, thereby touching people, inspiring people, encouraging people, and educating people.[9]

The deeds of Mr. Cheng Kaijia stand tall and strong. At the same time, in the process of China's socialist construction, there are many advanced individuals and groups like Mr. Cheng Kaijia. How to use these materials to truly educate students in thought is a question that every educator in higher education institutions should think deeply about (Figure 6). The question posed by Professor Zheng Qiang at the beginning of this paper directly hits the heart and the pain point, arousing students' enthusiasm for seeking knowledge, loving learning, patriotism, and serving the country in a gentle and detailed manner. This process is the process of ideological and political education for contemporary youth. University teachers can also learn from this in the process of carrying out ideological and political education in courses. By integrating various ideological and political elements, they can continuously let young people come into contact with one role model after another and one deed after another. While remembering these role models and deeds, their spirits can be passed down from generation to generation, inspiring generation after generation to strive for China. This is also the greater significance of ideological and political education in courses.



Figure 6. The First-Day Cover Launch Event Held by Xiuzhou Middle School, Mr. Cheng Kaijia's Alma Mater

5. Conclusion

In an era of profound social transformation and great cultural prosperity, it is necessary to cultivate scientific thinking and innovative thinking. Its essence lies in learning to analyze problems using the correct stance, viewpoints and methods, closely integrating learning, observation, practice and thinking. One should be good at grasping the direction of historical and current development, the mainstream and tributaries of society, phenomena and essence, and cultivate historical thinking, dialectical thinking, systematic thinking and innovative thinking. For course ideological education, it primarily represents a scientific thinking approach. It emphasizes viewing things from a dialectical materialist and historical materialist perspective, avoiding falling into the quagmire of idealism and mechanical materialism, which could lead to the theory becoming mystified. Especially in the current international situation, the ideological field is in constant flux, and various social thoughts and concepts collide fiercely. Our education needs to withstand pressure and resist erosion. It is necessary to further strengthen ideological and political education in various courses, use the stance, viewpoints, and methods of Marxism to teach and nurture people, build a solid ideological defense for students, and resist the harm of various wrong trends and incorrect statements to students. Secondly, what ideological and political education in courses demonstrates is an innovative way of thinking. It emphasizes integrating ideological and political education into courses other than ideological and political theory courses, which was not focused on in the past ideological and political education. Moreover, in the specific process of constructing ideological and political education in courses, innovative thinking is even more needed. New thinking gives birth to new ideas, new ideas seek new development, new development promotes new methods, and new methods solve new problems, achieving innovative development of ideological and political education in courses.[10]

Acknowledgments

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