

Practical Pathways for Integrating the Spirit of the Older Generation of Scientific and Technological Workers into University Students’ Ideological and Political Education: A Case Study of Yuan Longping

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[**Abstract**] The spirit of the older generation of scientific and technological workers—especially the innovation, pragmatism, patriotism, and dedication exemplified by Yuan Longping—constitutes a valuable spiritual legacy in China’s agricultural science and technology sector, as well as a crucial resource for ideological and political education among university students in the new era. This paper first outlines four defining characteristics of this spirit—resilient innovation, diligent pragmatism, patriotism, and selfless dedication—and points out that these qualities not only shaped the remarkable achievements of scientists but also offer vivid role models for university students’ moral and ideological growth. Building on this analysis, the paper further examines the threefold value of this spirit: guiding students in forming correct outlooks on the world, value, and life; inspiring patriotism and social responsibility; and enhancing their capacity for innovation and practical application. In response to current demands in higher education, the paper proposes five concrete educational pathways: innovative classroom teaching, enriched daily educational design, expanded practical education mechanisms, the construction of a culturally immersive ecosystem, and optimized policy and resource support. Through the systematic implementation of these pathways, the spirit of Yuan Longping and other veteran scientific and technological workers can be effectively integrated into all aspects of university ideological and political education, stimulating young students’ innovative potential and practical perseverance, and nurturing a new generation with both a global perspective and a deep sense of national commitment.

[**Key words**] spirit of the older generation of scientific and technological workers; Yuan Longping; ideological and political education; university students

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In 2018, during an inspection at the National Southern Breeding Research Base in Hainan, General Secretary Xi Jinping emphasized: “We should carry forward the spirit of the older generation of scientific and technological workers; Comrade Yuan Longping is a role model” (People’s Daily Online, 2022). Yuan Longping, as an

outstanding representative in the field of agricultural science in China, is known as the “Father of Hybrid Rice” for his remarkable scientific achievements and noble character. He not only propelled revolutionary progress in China’s grain production but also made significant contributions to global food security. The qualities of innovation, pragmatism, dedication, and patriotism demonstrated throughout Yuan Longping’s life vividly reflect the spirit of the older generation of scientific and technological workers and have become a model for the scientific spirit of contemporary Chinese scientists. These spiritual qualities not only embody Yuan Longping’s noble pursuits but also constitute a valuable resource for the development of socialism with Chinese characteristics in the new era. Against the background of globalization and rapid socio-economic development, it is particularly important for university students, as future builders of the nation, to enhance their ideological and political qualities. Integrating the spirit of the older generation of scientific and technological workers—especially the exemplary deeds of Yuan Longping—into the ideological and political education of university students to help them establish correct outlooks on the world, life, and value has become a crucial topic for colleges and universities. This spirit not only inspires patriotic enthusiasm and innovative consciousness among university students but also cultivates their sense of social responsibility and spirit of dedication. In-depth research and promotion of the scientific spirit exemplified by Yuan Longping represent an important measure for implementing General Secretary Xi Jinping’s directives on promoting the scientific spirit, and for carrying out the “Opinions on Further Promoting the Spirit of Scientists and Strengthening Work and Academic Conduct” issued by the General Office of the CPC Central Committee and the General Office of the State Council (General Office of the CPC Central Committee & General Office of the State Council, 2019), as well as for inheriting the spiritual lineage of the Communist Party of China (Liu, Wang & Liao, 2023). Actively promoting this spirit in the ideological and political education of university students can help young people better understand the arduous journey of national development, strengthen their confidence in the path of socialism with Chinese characteristics, and firm up their ideals and beliefs in striving for the great rejuvenation of the Chinese nation. Therefore, exploring the practical pathways for integrating the spirit of the older generation of scientific and technological workers—especially the exemplary deeds of Yuan Longping—into the ideological and political education of university students is of great practical significance and far-reaching historical value.

1 The four major qualities of the spirit of the older generation of scientific and technological workers

The spirit of the older generation of scientific and technological workers embodies the era’s ethos of Chinese intellectuals striving for the country and the people. Scientists represented by Yuan Longping developed qualities such as resilient innovation, diligent pragmatism, patriotism, and selfless dedication through long-term efforts. These characteristics not only forged their individual achievements and personal charisma but have also become a vital spiritual resource for the ideological and political education of university students in the new era, inspiring young people to strive for self-improvement and contribute to the nation.

1.1 Resilient innovation spirit; courage to break through and pursue continuous exploration

The resilient innovation spirit is a fundamental trait of the older generation of scientific and technological workers. Yuan Longping, as a representative, demonstrated extraordinary innovation and perseverance in the development of hybrid rice. His achievements were not the result of occasional inspiration, but of profound understanding of scientific laws and countless practical explorations. In the early 1960s, China faced a severe food crisis. Yuan Longping realized that traditional varieties could no longer meet the demands of a growing population. In 1961, he first discovered natural hybrid rice at the Anjiang Agricultural School experimental farm in Hunan (Yuan & Xin, 2010). In 1966, he discovered the three-line hybrid rice system and published the paper “Male Sterility in Rice” in the journal *Kexue Tongbao* (Yuan, Xin, Fu & Liao, 2010). On November 23, 1970, guided

by Yuan's idea of "maximizing the genetic distance of hybrid breeding materials by crossing a distant wild rice with cultivated rice," his assistants Li Bihu and Feng Keshan found "Wild Abortive" in Hainan, opening the breakthrough for indica three-line hybrid rice (Qi & Wei, 2002). After four years of arduous trials and unremitting effort, in 1974, Yuan Longping successfully bred Nan-you 2, the first high-yield hybrid rice variety for large-scale production, marking a historic breakthrough for hybrid rice promotion in China (Guo, 2016). This series of achievements not only solved China's food problem but also made China the world's first country to successfully promote hybrid rice. Yuan Longping's innovative thinking was not limited to hybrid rice research; he continuously upgraded technologies and eventually achieved breakthroughs in super hybrid rice, greatly increasing yields. His innovative spirit has had a profound impact, demonstrating the crucial role of scientific innovation in addressing major social challenges.

1.2 Diligent pragmatism: down-to-earth and pursuing the truth

Pragmatism is a fundamental cornerstone of the spirit of the older generation of scientific and technological workers and the guarantee of their scientific achievements. Yuan Longping, as a representative, always adhered to a down-to-earth and truth-seeking scientific attitude throughout his career. He firmly believed in "finding answers from the land", conducting agricultural science research with a grounded approach. He once said, "A person is like a seed and should strive to be a good seed" (Gao & Li, 2024), a simple statement that reflects his deep emotional connection to science and the land. During the breeding process of hybrid rice, Yuan and his team experienced hundreds of failures, but he never lost heart, always conducting experiments and observations in the fields. He believed that real progress in agricultural science must be tested by practice, not just theory in the laboratory. Thus, he repeatedly braved the elements, traveling to places like Hunan and Hainan for field trials, meticulously observing rice growth, recording every experimental data point, and constantly reflecting and summarizing. It was this long-term commitment to field research and practical investigation that enabled Yuan Longping to keenly identify problems, promptly adjust breeding plans, and ultimately achieve breakthroughs. Moreover, Yuan attached great importance to the transformation and social value of scientific achievements. He did not confine the success of hybrid rice to the laboratory or academic papers but personally entered the fields to guide farmers in mastering scientific planting methods, solving real production problems, and turning scientific achievements into productive forces. This rigorous scholarship and pragmatic approach not only shaped Yuan Longping's success but also became a precious spiritual legacy, inspiring future generations to persevere.

1.3 Strong patriotism: devotion to the nation and commitment to mission

A strong sense of patriotism is a distinctive trait of the older generation of scientific and technological workers and serves as the fundamental driving force for their pursuit of excellence and service to the nation. Yuan Longping's entire career was closely intertwined with the fate of the country; he made solving China's food security issues his lifelong mission, always placing the interests of the nation and the needs of the people above his own. Born in 1930, Yuan grew up during a time marked by war and poverty. As a child, he witnessed firsthand the suffering caused by national turmoil and hardship, which made him acutely aware of the vital importance of food for the country and its people. These experiences inspired him to embrace the ideal of "contributing to the nation and the people" (Xie & Xiao, 2012). After the founding of the People's Republic of China, at a time when the nation faced acute food shortages, Yuan Longping resolutely devoted himself to agricultural scientific research, closely aligning his personal destiny with the needs of the country. For decades, he remained rooted at the grassroots level, quietly dedicating himself to research and continuously striving for breakthroughs, making tireless efforts to ensure China's food security and advance agricultural science and technology. The hybrid rice technology he led and promoted not only greatly increased China's grain output, but also won the country broad international respect and

made China a leader in global agricultural science and technology. Yuan Longping once said simply, “A single grain of food can save a country, or it can topple a country. May everyone in the world have enough to eat” (Zhang, 2022). This statement encapsulates his lifelong pursuit and deep affection for his motherland and the people. In September 2020, General Secretary Xi Jinping remarked at a symposium with scientists, “Science knows no borders, but scientists have a motherland” (Xi, 2020). Yuan Longping embodied this spirit through concrete actions, closely integrating his personal ideals with national missions. The sense of devotion and responsibility exemplified by the older generation of scientific and technological workers provides a shining example for today’s university students, inspiring the younger generation to achieve excellence, serve the nation, and contribute their wisdom and strength to the great rejuvenation of the Chinese nation.

1.4 Selfless dedication: putting the collective first and wholehearted commitment

Selfless dedication is a defining character of the older generation of scientific and technological workers and a key driving force for the advancement of China’s science and technology and social progress. Yuan Longping devoted his entire life to the research and promotion of hybrid rice, always putting the interests of the nation and the people first, regardless of personal honor or gain. He pursued not only scientific breakthroughs but was more concerned about whether his work could genuinely benefit society and improve the lives of hundreds of millions. As General Secretary Xi Jinping emphasized, “The cultivation of innovative talents is a fundamental plan for the long-term development of the nation and the people. Ultimately, competition in the world today is competition in talent and education” (Xi, 2018). Yuan Longping not only upheld the spirit of selfless dedication in scientific research but also practiced it in talent cultivation. He understood the importance of passing on the torch in scientific research and thus paid great attention to the development of young scientific and technological talents and team building. As a mentor, Yuan Longping not only imparted theoretical knowledge but also led his students to conduct hands-on experiments, observe crops, and record data in the fields. He repeatedly emphasized the need for bold hypotheses and careful verification, requiring both innovation and a down-to-earth approach, leaving no room for impatience or carelessness (Guo, 2016). Through his actions, he deeply influenced every student, requiring them to embrace the same dedication and selflessness. Yuan Longping’s selfless spirit is also widely respected internationally. He served multiple times as an FAO consultant, helping promote hybrid rice technology in developing countries in Asia and Africa, contributing to global food security. When faced with lucrative offers from abroad, he resolutely chose to stay in China and encouraged his outstanding students to refuse foreign offers and remain in service to the nation (Xie & Xiao, 2012). He always acted with selflessness, fulfilling his original aspiration and mission of serving the nation through science and benefiting humanity. Yuan Longping’s noble character of selfless dedication and wholehearted commitment not only forged his personal achievements but also set a shining example for the youth of the new era. This spirit is the most precious legacy of the older generation of scientific and technological workers and an important guide for today’s university students as they grow, succeed, and serve society.

2 The threefold value of the spirit of the older generation of scientific and technological workers in ideological and political education

The spirit of the older generation of scientific and technological workers—especially the noble qualities of innovation, pragmatism, dedication, and patriotism represented by Yuan Longping—has become a valuable asset in both the advancement of agricultural science and the construction of social value systems. For the ideological and political education of university students in the new era, this spirit not only helps young students to establish correct outlooks on the world, life, and value, but also plays an irreplaceable role in strengthening ideals and beliefs, cultivating social responsibility, and fostering innovative awareness. In today’s complex and diverse social environment, systematically promoting the spirit of the older generation of scientific and technological workers is

particularly significant for guiding youth growth and talent development, as well as fulfilling the fundamental educational mission of moral development in universities.

2.1 Guiding the establishment of correct outlooks on the world, life, and value: shaping scientific rationality and value beliefs

Outlooks on the world, life, and value are the core of young people's ideological system and have a fundamental influence on their behaviors and life goals. The spirit of the older generation of scientific and technological workers—particularly Yuan Longping's patriotic devotion, global perspective, and selfless dedication—provides a vivid model for contemporary university students in establishing the right values. Through a lifelong pursuit of scientific research, Yuan Longping exemplified what a truly meaningful and valuable life looks like. He not only cared about China's food security but also about the well-being and agricultural development of people worldwide. His global vision encourages students to link their personal destiny closely with the fate of the nation, society, and even the community of humankind, thereby cultivating a broad worldview and a sense of responsibility for all. In terms of life outlook, Yuan Longping always regarded selfless dedication as his life credo. He did not care about personal gains and losses, dedicating all his energy to the cause of agricultural research for his country. His example teaches students that the value of life is not about personal fame or gain, but about contributing to society and the nation. Yuan Longping's deeds guide young people to abandon utilitarian and short-sighted thinking, inspiring them to pursue higher and more meaningful life goals. As has been emphasized: "The value orientation of young people determines the future value orientation of society as a whole, and as youth are at a critical stage for value formation and establishment, it is extremely important to cultivate correct values at this stage" (Xi, 2018). Yuan Longping exemplified collective spirit, patriotism, and high moral character, providing university students with a lofty value model. Adopting such values helps young people, in a complex environment of social transformation and value pluralism, to strengthen their ideals and beliefs, resist negative trends, and reinforce their sense of social responsibility and historical mission. This is of great practical significance for ideological and political education in higher education and for students' personal growth and success.

2.2 Inspiring patriotism and social responsibility: inheriting red genes and shouldering the mission of the times

Patriotism and social responsibility are essential value objectives in the ideological and political education of university students in the new era. The older generation of scientific and technological workers, represented by Yuan Longping, always placed national interests first and closely linked their personal destinies with the future of the nation and the people. When facing the lure of high salaries and favorable conditions abroad, Yuan Longping resolutely chose to stay in China, dedicating all his wisdom and energy to the development of Chinese agriculture, fully demonstrating his profound patriotism and sense of responsibility. Yuan Longping's deeds serve as vivid teaching materials for guiding young university students to strengthen their love for the nation and cultivate a sense of social responsibility. In today's era of deepening globalization and informatization, young students face the impact and challenges of diverse values. How to maintain firm ideals and strong patriotism in a changing international environment has become a crucial issue in ideological and political education in universities. Yuan Longping demonstrated through a lifetime of action that patriotism is not only an emotional identification but also an active responsibility and historical mission. In times of national need, the younger generation should have the courage to take responsibility, combine personal efforts with national rejuvenation, and thus live up to the times and the people. By studying Yuan Longping's patriotism in depth, his exemplary effect can inspire stronger patriotic feelings among university students, thereby enhancing their sense of social responsibility and prompting them to consciously integrate personal aspirations with the destiny of the nation—contributing to national prosperity and

people's well-being. Yuan Longping's story further educates students that patriotism should be reflected in concrete actions and in all aspects of learning, work, and social service, embodying a sense of service to the people and giving back to society. Only by truly integrating personal development with national destiny can young people achieve the sublimation of personal value and the unity of personal and social values. This spiritual strength is precisely the key support for the new generation of university students to become capable bearers of the great task of national rejuvenation.

2.3 Enhancing innovation and practical abilities: developing interdisciplinary thinking and hands-on skills

Innovation and practical abilities are core competencies that contemporary university students must possess. The spirit of the older generation of scientific and technological workers—especially the resilient innovation thinking and pragmatic approach exemplified by Yuan Longping—provides rich resources for innovation and entrepreneurship education and talent cultivation in higher education. Yuan Longping always emphasized that personal success depends on the combination of knowledge, hard work, inspiration, and opportunity. He believed that agricultural scientists must step out of the laboratory and into the fields; only through repeated exploration and courageous experimentation in practice can true scientific innovation be achieved. He often remarked that only scientific achievements achieved through sweat and hard work are truly solid (Xi, 2018). This philosophy not only reflects the law of integrating scientific innovation and practical experience but also offers valuable inspiration for university students. Through decades of tireless efforts, Yuan Longping continuously made breakthroughs in hybrid rice research, ultimately leading his team to solve the food problem for both China and the world. His experience shows that outstanding innovative ability cannot be separated from a solid foundation of practical work and a profound understanding of real-world problems. In contrast, although today's university students generally possess a strong theoretical foundation, they still tend to lack practical and innovative abilities, as well as the persistence and systematic problem-solving skills needed when faced with complex challenges. By learning from Yuan Longping's spirit of relentless practice and innovation, students can better appreciate the close relationship between innovation and practice. Yuan Longping achieved remarkable scientific success through a strong scientific spirit, rigorous academic attitude, and unwavering perseverance. His journey demonstrates to university students that only by persevering through setbacks, bravely trying new things, and rising to challenges can true innovation be realized. Grasping the dialectical relationship between innovation and practice is essential for young students to grow into new-era talents with both an international perspective and a sense of social responsibility.

3 Five practical pathways for integrating the spirit of the older generation of scientific and technological workers into ideological and political education in universities

Promoting the spirit of the older generation of scientific and technological workers in the ideological and political education of university students—especially the spirit of innovation, pragmatism, dedication, and patriotism embodied by Yuan Longping—is not only an important measure for fulfilling the fundamental task of moral cultivation but also a key pathway for developing innovative talents and new-generation youth capable of shouldering the mission of national rejuvenation. Exploring practical and effective pathways can ensure that this spirit deeply permeates students' cognition and behavior, guiding them toward the unity of personal growth and social contribution.

3.1 Innovating classroom teaching models: strengthening the coordination of innovative thinking and perseverance

Classroom teaching is the core arena of ideological and political education in universities. To effectively integrate the spirit of the older generation of scientific and technological workers into classroom teaching, innovation

is required in terms of content, methodology, and assessment mechanism. First, the classroom should be problem-oriented, utilizing diverse and interdisciplinary discussion formats to encourage students to actively think and dare to innovate when faced with complex real-world problems. Instructors can design open-ended case studies around themes such as “overcoming key technological bottlenecks” and “team collaboration in scientific innovation”, encouraging students from different academic backgrounds to propose solutions from multiple perspectives. Such multidimensional discussions not only help cultivate students’ problem awareness and innovative capabilities but also stimulate their enthusiasm for practical application. Second, teaching designs based on real-life scientific research cases are highly valuable. For example, by examining how Yuan Longping’s team overcame numerous challenges in hybrid rice development to achieve technological breakthroughs, teachers can guide students to analyze the practical challenges and key decisions in scientific innovation and appreciate the perseverance and innovative spirit demonstrated by the older generation of scientific workers through persistent exploration and repeated experimentation. Through group discussions, role-plays, and case analyses, students can experience the close connection between theory and practice, thereby stimulating independent learning and innovative thinking. Modern teaching approaches such as flipped classrooms and situational simulations add further dynamism to the classroom. Flipped classrooms encourage students to learn foundational knowledge independently before class, while teamwork and focused discussions during class deepen their understanding and problem-solving skills. Situational simulations allow students to experience the pressures and challenges inherent in scientific innovation through simulated decision-making. These highly practical activities not only enhance classroom participation but also train students’ ability to adapt, make quick decisions, and solve real problems. Finally, it is crucial to establish scientific and reasonable assessment mechanisms that not only focus on students’ final outcomes but also emphasize their thought processes and teamwork during discussions, experiments, and simulations. With ongoing feedback and process-oriented assessment, students can identify weaknesses, adjust their learning strategies, and continuously improve their innovative and practical skills. Systematic implementation of innovative classroom teaching models helps students deeply understand the intrinsic logic of scientific innovation and practical application, preparing them to meet national and societal needs with innovative thinking and perseverance, and to become responsible, innovative young people for the new era.

3.2 Deepening everyday educational design: guiding autonomous exploration of disciplinary frontiers and tackling real-world challenges

Everyday education, as an important complement to classroom teaching, is an indispensable component of ideological and political education for university students. It provides a valuable platform for combining theoretical knowledge with social practice and, through a variety of educational activities, stimulates students’ autonomous exploration and critical thinking, promoting the transformation of theory into practice. The exploratory persistence shown by the older generation of scientific and technological workers—especially Yuan Longping in his scientific research—offers a vivid spiritual model for designing everyday education for university students. First, everyday education should be problem-oriented, closely linked to the pressing issues and development challenges faced by the nation and society, guiding students to actively identify and analyze real problems. Through activities such as themed Party Day events, Youth League Day events, class seminars, and frontier research sharing sessions, teachers can organize interdisciplinary and small-group discussions around real-world topics like “food security and scientific innovation” or “ecological protection and regional development coordination”, cultivating students’ ability to apply theory to complex real-world problems. Yuan Longping’s spirit of continuous experimentation and fearless breakthroughs in hybrid rice research serves as an exemplary model for students in independently discovering and solving problems. Second, everyday education should focus on fostering students’ autonomous

learning abilities. Unlike the highly structured nature of classroom teaching, everyday education places greater emphasis on developing independent thinking skills through activities such as data retrieval, analytical comparison, and the articulation of personal viewpoints. By participating in research sharing, group investigations on disciplinary frontiers, and case studies of real-world challenges, students are encouraged to seek new knowledge proactively, focus on integrating theory and practice, and improve their capacity for innovation and practical problem-solving. Teamwork is also an indispensable element of everyday education. The diversity and complexity of real-world issues require students to learn cooperation and effective communication. Through interdisciplinary collaboration and group projects, students can inspire each other, learn from each other's strengths, and explore multiple pathways to problem-solving, thereby enhancing their collaborative awareness and organizational skills. Such experiences not only develop students' communication and collaboration abilities in the face of real-world challenges but also spark innovative ideas. During implementation, teachers should establish dynamic feedback and process-oriented evaluation mechanisms to promptly guide and summarize students' growth and shortcomings in independent exploration and teamwork, with a focus on how process-oriented evaluation encourages and guides critical thinking and innovative capacity. Through ever-improving educational design, students can gain valuable experience in independent exploration and teamwork, gradually strengthening their overall competence in meeting complex challenges. In summary, by deepening everyday educational design through problem orientation, autonomous learning, and teamwork, students are actively guided to engage with disciplinary frontiers and social realities, cultivating their ability to innovate and tackle real-world problems. Drawing on the spirit of persistent exploration and ongoing breakthroughs exemplified by Yuan Longping and his peers, everyday education provides university students with solid capability and spiritual motivation for serving the nation and society in the future.

3.3 Expanding practical education mechanisms: laying the foundation for focus and social responsibility

In contemporary higher education, practical education mechanisms are not only an effective bridge for transforming theoretical knowledge into real-world abilities but also a crucial platform for cultivating students' focus and sense of social responsibility. The perseverance and dedication to serving society exemplified by the older generation of scientific and technological workers—especially role models like Yuan Longping—offer invaluable examples for universities to draw upon in practical education. By constructing a systematic and dynamic framework for practical education, universities can purposefully organize projects closely aligned with national development and social progress, guiding students to experience the essence of real-world challenges and hone both sustained focus and a value orientation toward serving society. First, expanding practical education mechanisms should focus on addressing real-life problems. Universities can design targeted fieldwork projects centered on national strategies such as agricultural technology promotion, rural revitalization, and ecological environmental protection. Through research, site visits, and communication with various stakeholders, students directly confront grassroots realities and analyze real challenges in depth. In this process, they must identify the root causes of problems, propose innovative solutions, and continuously refine their approaches in practice. Just as Yuan Longping persevered through repeated trials in promoting hybrid rice, students will also experience setbacks and challenges in their projects, cultivating both focus and problem-solving abilities through sustained engagement. Second, practical education mechanisms should emphasize teamwork and interdisciplinary integration. Complex social issues often require the joint efforts of multiple fields of knowledge. By forming interdisciplinary teams and collaborating on problem-solving, students can broaden their horizons, leverage their individual strengths, and experience the power of collective intelligence. For example, in agricultural technology promotion projects, students from different academic backgrounds can collaborate on project management, technological innovation, data analysis, and policy

interpretation, enhancing both the effectiveness of practical work and their cooperative spirit and sense of social responsibility. A scientific and dynamic management and evaluation system is essential for the effective operation of practical education mechanisms. Projects can be structured into stages such as problem identification, solution design, implementation, and outcome assessment, with clear objectives and evaluation criteria at each step. Teachers and advisors should closely monitor students' logic, teamwork, innovative methods, and reflective abilities throughout the process, facilitating regular reporting, presentations, and discussions to encourage experiential learning and ongoing growth. A dynamic evaluation system motivates students to continually improve themselves in practice, internalizing focus and responsibility as personal qualities. More importantly, practical education mechanisms should guide students to integrate personal growth with national and social development. By participating in social practice projects closely related to national strategies, students gradually realize that their own progress is inseparable from social advancement and the country's destiny. Drawing inspiration from the enduring focus and selfless dedication shown by Yuan Longping and his peers throughout their research careers, students can translate social responsibility into real action, developing a strong sense of public awareness and historical mission as they continuously solve real-world problems. In summary, systematically expanding practical education mechanisms not only helps students cultivate a high degree of focus and responsibility through real projects but also lays a solid foundation for their future service to the country and society, preparing them to become the backbone of society capable of taking on the responsibilities of the era.

3.4 Building a culture of immersion: shaping individual value identification and understanding of success

Campus culture is vital soil for university education and has a profound impact on shaping students' values and perceptions of success. By creating a positive and inspiring campus environment that champions innovation and dedication, universities can help students internalize the spirit of "innovation, pragmatism, patriotism, and dedication" embodied by the older generation of scientific and technological workers, thus forming behavioral norms and value pursuits focused on scientific exploration and social service. Cultivating values through culture is not a single event, but rather a subtle, ongoing, and systemic process. First, themed activities are an effective vehicle for infusing the culture of scientific spirit. Universities can regularly host events such as "Spirit of the Older Generation of Scientific Workers Exhibitions", "Youth Innovation Forums" and "Stories of Scientific Figures", allowing students to gain firsthand insights into the challenges and achievements of Yuan Longping and other scientists on their research journeys, and to appreciate the essence of focus, resilience, and innovation. Inviting scientists and industry experts to deliver campus lectures and share real experiences in scientific exploration can deepen students' understanding of the persistence and accumulation behind success, thus forming the value identification centered on exploration and dedication. Second, the daily integration of cultural elements is equally essential. Schools can set up themed displays in teaching buildings, laboratories, libraries, and other public areas, highlighting inspiring stories, famous quotes, and innovative achievements of the older generation of scientific and technological workers. This continuous cultural exposure in students' daily study and life helps reinforce the recognition of "persistent exploration and serving society", cultivating positive behavioral habits. In addition, on-campus competitions and project participation offer practical platforms for strengthening value identification and perceptions of success. Organizing knowledge contests, creative challenges, and hands-on projects around themes like "scientific and technological innovation", "food security" and "green development" enables students to experience firsthand the integration of personal effort and collective wisdom through teamwork and practice. Such experiences not only enhance problem-solving abilities but also deepen the understanding that success requires long-term focus, continuous exploration, and collective effort. To ensure the sustained effect of a culture of immersion, universities

should systematically integrate the scientific spirit into campus culture construction and establish long-term mechanisms. For example, instituting an annual “Scientific Spirit Month”, building “Scientific Spirit Cultural Bases”, and regularly holding related lectures, seminars, and salons all contribute to the ongoing enrichment of campus culture. This approach not only strengthens the soft power of campus culture but also ensures that students are continuously influenced and inspired on cognitive, emotional, and value levels. In summary, building a culture of immersion is a key pathway for universities to cultivate students’ scientific value identification and correct perceptions of success. Through the organic combination of themed activities, daily cultural integration, and practical competitions, students can internalize the spirit of persistent exploration and social service, striving for excellence in their future studies and lives, and closely linking their personal aspirations with the progress of the country and society.

3.5 Optimizing policy and resource support: aligning national strategic needs with individual development pathways

Optimizing policy and resource support is a fundamental guarantee within the university talent cultivation system, facilitating the effective integration of individual growth with national strategies. By establishing a sound policy framework and efficient resource allocation mechanisms, universities not only provide students with platforms to tackle real-world challenges but also guide them to align their personal development goals with major national strategic demands, thereby promoting mutual empowerment. First, universities should proactively align with national development plans and the needs of industrial transformation and upgrading, actively implementing various special policies. Around key national fields such as “high-end equipment manufacturing”, “green energy” and “digital economy”, universities can establish targeted research projects and innovation programs, providing students with dedicated funding, laboratory facilities, and technical guidance. Just as Yuan Longping achieved technological breakthroughs in hybrid rice research by relying on national policy support and research resources, such policy guidance and resource assurance offer students valuable opportunities to access cutting-edge technologies and participate in major projects. Through these practical experiences, students come to appreciate the profound impact of scientific and technological innovation on the nation’s destiny, thereby fostering ideals of serving the country and pursuing excellence. Second, resource integration and platform construction create a solid foundation for individual development. Universities should strengthen deep cooperation with research institutes, enterprises, and local governments, jointly establishing experimental bases, training platforms, and innovation incubation centers. By sharing resources and breaking down disciplinary barriers, universities can promote interdisciplinary collaboration and innovation. Students, by participating in practical projects, are able to enhance their capacity for independent innovation and problem-solving. Yuan Longping’s own experience demonstrates that strong resource support and teamwork are crucial for both personal growth and scientific innovation. Universities should draw lessons from this model and continuously provide students with broad development opportunities. Establishing a long-term, incentive-driven mechanism is equally indispensable. Universities can create honors such as “Youth Innovation Award” and “Research Achievement Award”, regularly host achievement exhibitions and academic exchanges, and foster a culture that encourages innovation. Such incentive mechanisms not only boost students’ enthusiasm for scientific research and practical engagement but also help them identify the intersection between personal development and national needs, cultivating a value orientation toward the public good. To ensure the sustainability and adaptability of policy and resource support, universities should enhance collaboration with governments, enterprises, industry associations, and other stakeholders, establishing dynamic feedback and continuous improvement mechanisms. By regularly assessing the effectiveness of policies, optimizing resource allocation, and adjusting incentive measures, universities can ensure that talent cultivation systems always stay in sync with national

strategic directions and the forefront of science and technology. A continually improving policy and resource system provides a solid guarantee for students' growth and success, and enables the country to cultivate more innovative and socially responsible talents for the new era. In summary, optimizing policy and resource support is a key measure for achieving synergy between university education and national development. Through policy guidance, resource integration, and incentive mechanisms, universities not only build practical platforms for student development, but also guide them to closely integrate their personal pursuits with serving the nation. Drawing on the achievements of Yuan Longping and other members of the older generation of scientific and technological workers, who succeeded under strong policy and resource support, universities should continuously improve their talent cultivation models, helping young students become pillars of the era—equipped with international perspectives, innovative capabilities, and a strong sense of national commitment.

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