

# Comprehensively Integrating the Spirit of Scientists in the New Era into College Students' Education

Haitao Zhang\*, Jiachen Xie, Mingyue Sun, Yu Zhou, Xinyi Cao

Huaiyin Institute of Technology, Huaian, Jiangsu, China

\* Corresponding author: Haitao Zhang

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**Abstract:** The spirit of scientists in the new era is an important part of the Chinese national spirit, containing six core connotations: "patriotism, innovation, seeking truth, dedication, collaboration, and education". At the critical stage when higher education is moving towards high-quality development, comprehensively integrating it into college students' education is not only an inevitable requirement for implementing the fundamental task of fostering virtue through education but also a strategic measure for cultivating scientific and technological talents who can shoulder the responsibility of national rejuvenation. This paper systematically explores the integration path of the spirit of scientists in the new era from four dimensions: curriculum-based ideological and political education, campus culture construction, practical teaching, and faculty team construction, aiming to build a "four-in-one" education system and provide theoretical reference and practical paradigm for talent cultivation in colleges and universities.

**Keywords:** Spirit of Scientists in the New Era, College Students' Education, Curriculum-Based Ideological and Political Education, Campus Culture, Practical Teaching, Faculty Team.

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## 1. Introduction

In recent years, the Chinese government has emphasized[1]: "We should vigorously promote the spirit of scientists in the whole society and guide the majority of scientific and technological workers to care for the motherland, serve the people, and climb the peak of science and technology". As inheritors and pioneers of the future scientific and technological cause, college students' cultivation of scientific literacy, values, and spiritual character is directly related to the core competitiveness of national innovative development. At present, [2]some colleges and universities have the tendency of "valuing knowledge imparting over spiritual guidance" and "valuing skill training over value shaping" in talent cultivation, leading to fragmented cognition and superficial practice of the spirit of scientists among college students. Therefore, [3]breaking through the single education model and building a comprehensive integration system of "curriculum-based ideological and political education as the foundation, campus culture as infiltration, [4]practical teaching as empowerment, and faculty team as guidance" has become an important issue for colleges and universities to implement the concept of "all-round education".

## 2. Taking Curriculum-based Ideological and Political Education as the Core to Construct the "Classroom Infiltration" System of the Spirit of Scientists

[5]Curriculum is the main position of education, and curriculum-based ideological and political education is the core carrier for integrating the spirit of scientists into college students' education. Colleges and universities need to break the barrier between "ideological and political courses" and "professional courses", and through "content excavation, method innovation, and evaluation optimization", let the spirit

of scientists naturally integrate into the whole process of classroom teaching, realizing the resonance of "knowledge imparting" and "value guidance".[6]

### 2.1. Excavating Curriculum Content to Create a "Professional + Spirit" Integration Carrier

Different discipline courses contain different connotations of the spirit of scientists, which need to be accurately excavated in combination with professional characteristics. In science and engineering courses, teaching content can be designed around the [7]three cores of "innovation", "seeking truth", and "collaboration"; for example, in general education courses, special elective courses such as "Introduction to the Spirit of Scientists" and "Scientific and Technological Ethics and Feelings for the Country" can be offered to systematically explain the historical context, contemporary value, and practical requirements of the spirit of scientists, helping students form a complete spiritual cognition system[8].

### 2.2. Innovating Teaching Methods to Activate the Dual Resonance of "Cognition + Emotion"[9]

Traditional "indoctrination" teaching is difficult to stimulate students' emotional identification with the spirit of scientists. It is necessary to make the spiritual connotation perceivable, knowable, and learnable through "situational, interactive, and experiential" teaching methods. First, adopt the "case teaching method" and select the deeds of scientists close to students' majors; second, promote "project-based learning" and let students study the life of scientists in groups; third, use the "flipped classroom" to organize students to debate on "how college students in the new era practice the spirit of scientists", transforming spiritual cognition into self-reflection[10].

### **2.3. Optimizing the Evaluation Mechanism to Realize the Dual Assessment of "Process + Result"[11]**

To avoid the "formalization" of integrating the spirit of scientists, it is necessary to establish a diversified evaluation mechanism and incorporate the practice of the spirit into the curriculum assessment system. In the process evaluation, [9]the depth of students' understanding of the spirit of scientists can be assessed through "classroom speeches, case analysis reports, and scientific research logs".

### **3. Taking Campus Culture as the Basis to Construct the "Environmental Influence" System of the Spirit of Scientists**

Campus culture is an important carrier of implicit education. By creating a cultural environment where "the spirit is seen everywhere and influenced at all times", the spirit of scientists can be internalized into the behavioral habits and value pursuit of college students. Colleges and universities need to build a comprehensive cultural infiltration system from three levels: "material culture, institutional culture, and spiritual culture".

#### **3.1. Building Material Culture Positions to Make the Spirit of Scientists "Visible and Tangible"**

Material culture is the intuitive presentation of the spirit of scientists. It is necessary to construct an "immersive" cultural scene through the careful design of campus space. First, build a "theme exhibition hall of the spirit of scientists" to systematically display the deeds, scientific research achievements, and spiritual quotations of scientists in different historical periods of China.

#### **3.2. Improving Institutional Culture Guarantee to Make the Spirit of Scientists "Regulated and Implementable"**

Institutional culture is an important guarantee for the implementation of the spirit of scientists. It is necessary to transform the spiritual requirements into norms of campus management and student behavior by establishing and improving relevant systems. First, formulate "campus scientific research ethics norms" to clarify the specific requirements of the spirit of "seeking truth" and "integrity"; second, establish a "commendation system for practicing the spirit of scientists", set up honorary titles such as "campus model of the spirit of scientists" and "pioneer of scientific and technological innovation", and commend students who practice the spirit of scientists in scientific research practice and voluntary services; third, improve the "campus academic activity management system", requiring various academic lectures and scientific and technological competitions to integrate elements of the spirit of scientists.

#### **3.3. Enriching Spiritual and Cultural Activities to Make the Spirit of Scientists "Alive and Passed On"**

Spiritual and cultural activities are the dynamic communication carriers of the spirit of scientists. It is necessary to stimulate students' participation enthusiasm and

emotional resonance through diversified activity forms. First, hold a "Theme Activity Month of the Spirit of Scientists" to carry out a series of activities; hold a "Theme Art Performance of the Spirit of Scientists" to interpret the touching stories of scientists through dramas, poetry recitations, songs, etc.; second, carry out "Science and Technology Culture Festival" activities to integrate the spirit of scientists into scientific and technological practice; third, establish a "student society of the spirit of scientists" to let students become the main body of spiritual communication.

### **4. Taking Practical Teaching as the Grasp to Construct the "Unity of Knowledge and Action" System of the Spirit of Scientists**

Practice is the key link to test spiritual cognition and promote spiritual internalization. Colleges and universities need to break the boundary between "classroom and society", and through "scientific research practice, social practice, and innovation and entrepreneurship practice", let students experience the connotation of the spirit of scientists in their personal experience, realizing the unity of "knowledge" and "action".

#### **4.1. Relying on Scientific Research Practice to Cultivate the Spirit of "Seeking Truth, Innovation, and Collaboration"**

Scientific research practice is the "training ground" for the spirit of scientists. It is necessary to guide students to participate in real scientific research processes and practice the spirit in overcoming difficulties. First, build a "Undergraduate Research Training Program (SRTP)" platform to encourage students to join teachers' scientific research teams; second, organize "interdisciplinary scientific research projects" to strengthen the spirit of "collaboration": such as carrying out interdisciplinary projects to let students understand the importance of "collaborative research" in cross-field cooperation; third, establish a "scientific research setback education mechanism", through "scientific research failure case sharing sessions" and "one-on-one guidance by tutors", help students correctly face difficulties in scientific research, guide students to learn the spirit of scientists "becoming more courageous in setbacks", and avoid the mentality of "eagerness for quick success and instant benefits".

#### **4.2. Relying on Social Practice to Cultivate the Spirit of "Patriotism and Dedication"**

Social practice is a bridge connecting the spirit of scientists with social needs. It is necessary to guide students to enter society and practice the spirit of "patriotism and dedication" in serving the people. First, carry out "scientific and technological poverty alleviation social practice" to let students use professional knowledge to help rural revitalization; second, organize "scientific and technological anti-epidemic and scientific and technological disaster relief" voluntary practice to strengthen "feelings for the country" and let students practice the spirit of "caring for the motherland" in times of crisis; third, carry out "spirit of scientists traceability practice", organize students to visit scientists' former residences and scientific research institutes, so that students can deeply understand the patriotic feelings of

scientists "writing papers on the land of the motherland".

### **4.3. Relying on Innovation and Entrepreneurship Practice to Cultivate the Spirit of "Daring to Be the First and Taking Risks"**

Innovation and entrepreneurship practice is the concentrated embodiment of the "innovation" connotation of the spirit of scientists in the new era. It is necessary to encourage students to dare to break through and try by building platforms. Build a "college students' innovation and entrepreneurship incubation base" to provide students with "project incubation, fund support, and tutor guidance"; hold "innovation and entrepreneurship competitions" and set "social value orientation" evaluation standards; carry out "innovation and entrepreneurship setback sharing sessions", invite alumni who failed in entrepreneurship to share their experiences, let students understand that "innovation is bound to be accompanied by risks", learn the spirit of scientists "not afraid of failure and persisting in exploration", and avoid the mentality of "afraid of making mistakes and daring not to try".

## **5. Taking Faculty Team Construction as the Key to Construct the "Leading and Demonstration" System of the Spirit of Scientists**

Teachers are the first resource of education, and the degree of teachers' understanding and practice of the spirit of scientists directly determines the effect of integrating into education. Colleges and universities need to build a faculty team that "understands the spirit, can communicate, and is good at practicing" through "selection, training, and incentives", so that teachers can become "living textbooks" of the spirit of scientists.

### **5.1. Strictly Controlling the Faculty Selection to Ensure Teachers Have the Foundation of "Spiritual Identity"**

In the recruitment and introduction of faculty, "scientific spirit literacy" should be included in the evaluation indicators to ensure the spiritual guidance ability of teachers from the source. In the recruitment process, add relevant assessments on "cognition and practice of the spirit of scientists"; in the introduction of talents, give priority to introducing teachers with "patriotic feelings and outstanding scientific research achievements"; establish a "faculty induction training" system, include the "spirit of scientists" in the compulsory content of new teachers' induction training, and help new teachers quickly understand the spiritual connotation and form spiritual identity through "special lectures, experience sharing by senior teachers, and on-site visits to scientists' exhibition halls".

### **5.2. Strengthening Faculty Training to Improve Teachers' "Spiritual Communication" Ability**

Teachers not only need to practice the spirit of scientists themselves but also need to have the ability to integrate the spirit into education and teaching. Colleges and universities need to improve teachers' "spiritual communication literacy" through diversified training methods. Carry out special training on "curriculum-based ideological and political

education and integration of the spirit of scientists": invite ideological and political experts and excellent teachers to carry out workshops to help teachers master integration methods; organize "faculty scientific research ability improvement plan" to let teachers deepen their spiritual practice in scientific research practice; build a "faculty exchange platform" to improve the scientific and artistry of integration.

### **5.3. Improving Faculty Incentive Mechanism to Stimulate Teachers' "Spiritual Practice" Motivation**

Through the incentive mechanism, let teachers internalize "spreading the spirit of scientists" into conscious action. Establish a "scientific spirit practice assessment system" and include it in the indicators of teachers' annual assessment and professional title evaluation; set up a "scientific spirit communication reward fund" to commend teachers who "have achieved remarkable results in integrating the spirit of scientists into education and teaching"; create a campus atmosphere of "respecting scientists and promoting the spirit of scientists": publicize typical cases of "practicing the spirit of scientists" among teachers through "teachers' scientific research achievements exhibition" and "excellent teacher deeds publicity".

## **6. Conclusion**

The comprehensive integration of the spirit of scientists in the new era into college students' education is a systematic project, which requires the coordinated efforts of curriculum-based ideological and political education, campus culture, practical teaching, and faculty team as a "four-in-one": curriculum-based ideological and political education is the "main channel" to ensure the depth of spiritual integration; campus culture is the "macro environment" to ensure the breadth of spiritual integration; practical teaching is the "touchstone" to ensure the effectiveness of spiritual integration; the faculty team is the "guide" to ensure the accuracy of spiritual integration. Only by building an education system of "full curriculum integration, full environment infiltration, full practice empowerment, and full faculty guidance" can the spirit of scientists in the new era truly enter the hearts of college students, guide them to "care for the motherland, serve the people, and climb the peak" in their study and growth, and grow into high-quality scientific and technological talents meeting the national strategic needs.

In the future, colleges and universities need to further explore the "digital integration path", for example, using VR technology to build a "virtual scientist laboratory" to let students experience the scientific research process of scientists immersively; using big data to analyze students' cognition and practice of the spirit of scientists to realize "personalized education". At the same time, it is also necessary to strengthen "inter-school cooperation and school-enterprise cooperation", integrate high-quality resources, and jointly develop the spirit of scientists education projects, forming a pattern of "whole society collaborative education", so that the spirit of scientists can become a powerful spiritual driving force for promoting the growth of college students and national innovative development.

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