

# Research on the Cultivation Mechanism of "Five Integrations " Oriented to Industrial Demand

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**Abstract:** In recent years, with regard to the training of engineering talents, the phenomenon that theoretical knowledge and practical skills can not be well combined has become increasingly prominent, and it is urgent to reform and innovate the training mode and standards of engineering talents. At the same time, the reform of training mode should adhere to the development needs and problem-driven of national talents. This paper intends to study the training standards of new engineering talents, take coping with changes and shaping the future as the construction concept, take inheritance and innovation, cross-integration, coordination and sharing as the main ways, take training high-quality engineering and technical applied talents in the field of artificial intelligence as the goal, take the development needs of modern industry as the guidance, and combine with the discipline characteristics of the school. This paper studies the innovative construction mode of "Intelligent Science and Technology" specialty, and explores the establishment of "five integrations" training mechanism of enterprises and universities integration, science and education integration, universities integration, three-innovation integration and disciplines integration.

**Keywords:** Enterprises and universities integration, Science and education integration, Universities integration, Three-innovation integration, Disciplines integration.

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## 1. Introduction

Entering a new era of socialism, the education of intelligence specialty in China has developed rapidly, but it is still affected by many aspects such as training mode and mechanism, which leads to the poor integration of theoretical knowledge and innovative practice. Under the challenge of the new situation, on October 29, 2020, the Fifth Plenary Session of the Nineteenth Central Committee of the Communist Party of China adopted the "Recommendations of the Central Committee of the Communist Party of China on Formulating the Fourteenth Five-Year Plan for National Economic and Social Development and the Long-term Goals for 2035", which emphasized that we should stimulate the innovative vitality of talents and put forward that we should strengthen innovation. Implement knowledge renewal projects and skills upgrading actions to expand the ranks of high-level engineers and highly skilled personnel. On the other hand, through the construction of the "five integration" training mechanism, promoting the organic integration of innovation, science and education and talents not only meets the needs of national development, but also has great significance for improving the level of talents.

## 2. Cultivation Mechanism and Current Situation

"Five integrations" is an innovation of the current talent training mechanism, which plays an important role in improving the comprehensive quality and practical innovation ability of undergraduates and postgraduates majoring in "Intelligent Science and Technology", and is a further improvement of the training mechanism based on "three integrations", which refers to the integration of science and education, integrate the resources of enterprises with vocational schools and universities, and theory and practice.

## 2.1. "Five Integrations"

### 2.1.1. Enterprises and Universities Integration

The integration of enterprises and universities [1][4] is one of the most common means to train students' practical application. Through effective cooperation between schools and enterprises, a new training mechanism is established to promote students to develop into innovative, applied and compound talents. At present, through cooperation with many enterprises to carry out horizontal research, we have established a good cooperative relationship with enterprises and increased the employment rate of students. At the same time, with the gradual stabilization of cooperation with enterprises, the number of students participating in horizontal research has gradually increased, and students have made some achievements in theoretical research and innovative practice. Since the implementation of the relevant training mechanism, the Department of Intelligent Science and Technology has made remarkable achievements in scientific research, and has obtained a number of provincial and ministerial research projects in the past three years. Full-time teachers and students have published more than 100 which include SCI papers, Chinese core papers and various conference papers.

### 2.1.2. Science and Education Integration

As the core concept of running a world-class university, the integration of science and education [2] [3] is inseparable from the cultivation of talents, which has become a universal rule for many universities to cultivate talents. From an intuitive point of view, the integration of science and education is the integration of scientific research, teaching and scientific research, taking scientific research achievements as the content or platform of teaching innovation, and then producing scientific research achievements through teaching innovation-engineering laboratory, virtual teaching and research room, etc.

### 2.1.3. Universities Integration

Integration of universities is mainly the exchange and discussion between universities. At present, it is mainly implemented in the form of academic conferences, expert lectures and academic competitions. In terms of academic conferences, we cooperate with universities to hold academic lectures in various aspects to expand students' thinking and enhance their innovative ability. At the same time, it also organizes subject competitions with various colleges and universities to stimulate the sense of competition and improve students' innovative application level. Up to now, students majoring in "Intelligent Science and Technology" have won more than 300 prizes in academic competitions held by various universities and countries.

### 2.1.4. Three-innovation Integration

"Three innovations" (creativity, innovation, entrepreneurship) [5] [6] personnel training is the new

requirements of deepening the reform of higher education system in the new era. At present, the "Three innovations" education model has been actively exploring and researching to cultivate high-level, high-quality and innovative talents. In the past two years, the students majoring in "Intelligent Science and Technology" have achieved good results in the project. Among them, there are two national projects, one provincial project and one project.

### 2.1.5. Disciplines integration

Integration of disciplines [7] is the cross research between various disciplines. At present, the specialty of "Intelligent Science and Technology" has been integrated with metallurgy, medical treatment, military industry and other aspects.

The following figure shows the specific arrangements and current progress in the implementation of the "five integrations" training mechanism.

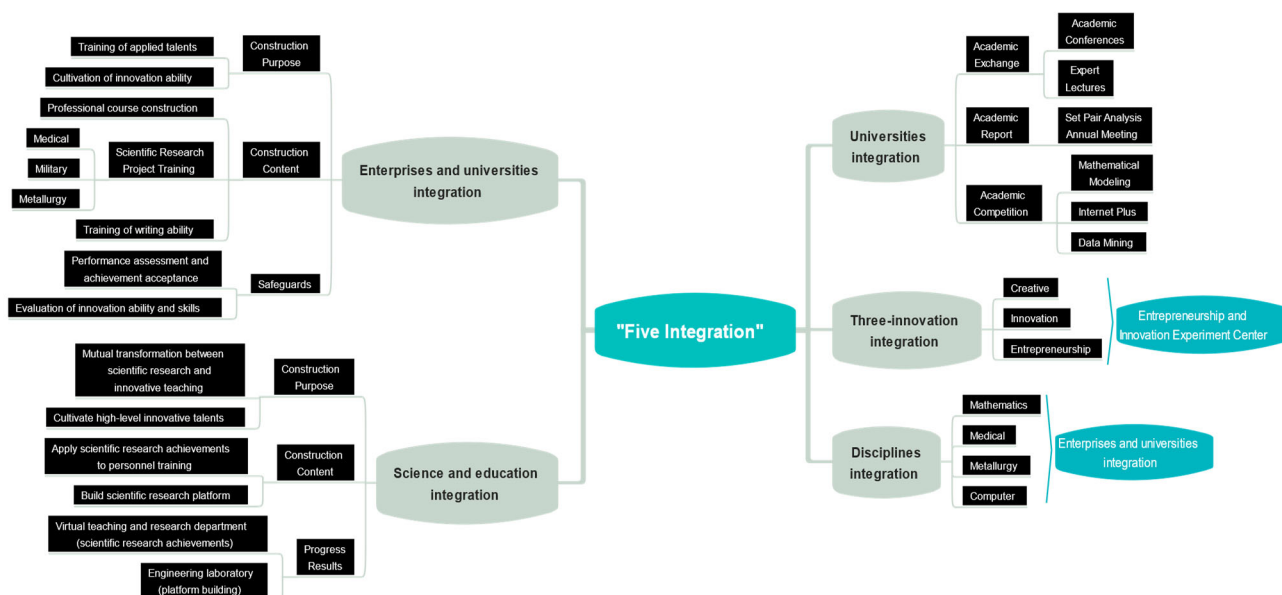


Figure 1. Specific arrangements and current progress of the "five integrations"

## 3. Conclusion

Based on the implementation of the training system of "five integrations", good results have been achieved, which greatly enriches students' theoretical knowledge and improves their practical ability of innovation and entrepreneurship.

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