

# *Research and Practice of Innovative and Entrepreneurial (IE) Talents Training Models and Schemes——Taking English Majors as an example*

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**Abstract:** IE are the keys to winning in the international competition for an intelligent society. Creating IE education programs and cultivating IE talents is not only the growth culture of higher education in the world, but also the sacred foundation for my country to implement innovative research, build a new country, and develop a commercial economy. Therefore, cultivating IE talents of English majors is also a problem that cannot be ignored, and it is also an inevitable development. The purpose of this paper is to study the training system of industrial engineering talents for English majors, and build IE talent training and education system centering on the reform and improvement of the training program of English disciplines. According to the practical research, 65.40% of the students said that they liked or quite liked the various practical or internship activities arranged by the school, but only 42.54% of the students thought that the effects of these practices or internships were very good or relatively good.

## **1. Introduction**

Innovation is the driving force and source of human progress and the spirit of a nation. Only innovation can progress and develop. IE are closely related. Through the innovation of entrepreneurship education, innovation is integrated into the social development of the country, economy and industry, and successful entrepreneurs are cultivated [1-2]. Developing an IE education program is key to the challenges of building a new nation and developing a business plan. Therefore, English professionals with IE skills are also indispensable to the development of higher education.

The focus of current higher education research is to cultivate IE talents. The research and practice of domestic IE education are also fruitful. For example, Machado J has built a "1+1+N tutor system" IE talent training model based on work practice. In order to meet the individual

differences and development needs of students, it is jointly guided by various tutors, which truly realizes teaching according to aptitude, levels and categories Cultivate IE talents [3]. With reference to Guo Di's suggestions on the Construction of IE Education System for College Students, this three-dimensional IE education concept and setting can be applied to China's undergraduate education so as to form a long-term and effective operation mechanism [4]. From this point of view, there are quite a few research results worthy of reference for cultivating IE talents majoring in English.

Based on the development trend of higher education, this paper introduces a variety of training schemes for innovative business + technical talents, and also finds a new way and solution for the training of innovative and entrepreneurial talents for English majors in China. We should draw lessons from the successful experience of innovation business education both at home and abroad, the diversification of multi-level business education, helps to cultivate the students' innovation ability, improve the core qualities of students and the comprehensive skills, and also helps to develop the high comprehensive quality of international innovative and entrepreneurial talents.

## **2. Research on the Training Mode and Plan of IE Talents**

### **2.1 The Prerequisite for the Cultivation of IE Talents**

(1)Advanced educational concepts are the guide for cultivating IE talents

The era of new industrial revolution is full of innovation and requires the support of a large number of innovative and business talents. Abundant human development is the source of IE. We should always Student oriented, not only impart professional knowledge, but also formulate relevant policies to protect students' innovation and entrepreneurship. In addition, we also want to learn from the curriculum setting, teaching methods, evaluation programs and other aspects of personalized IE talents training mode to promote the development of IE talents and truly understand IE talents.

(2)The management system is the foundation for cultivating IE talents

The educational management system contributes to the composition and operation of the educational system, and directly affects the reform and development of the educational management in colleges and universities. To build an IE talent training model for English majors, it is necessary to change the education management system. In the process of building an IE talent training model for English majors, the government should streamline administration and delegate power, allow colleges and universities to run schools on their own, clarify school-running responsibilities, and enhance school-running vitality, so as to innovate the training model. We should stick to the government school as the leading factor, at the same time, we should encourage social forces to run education together, give full play to the state, society, different effects of the individual, as a result, not only effectively stimulated the university reform and vitality, but also promoted the entrepreneurial talent training system in colleges and universities, then enhanced the system of interrelated, interaction and mutual support, In this way, comprehensive full-time education can be achieved and high-quality IE talents for English majors can be cultivated [5-6].

(3) Teaching plan is the core of IE talents training

As the maker of the training program, we should evaluate the situation, make the best of the situation, make full use of the school's own advantages, and construct a talent training mode in line with the local economic characteristics; At the same time, IE will be integrated into the characteristics of English majors, increase case teaching, formulate and implement practical teaching plan, and build a multi-dimensional practical teaching platform of industry, university and

research. More importantly, we should improve the teaching concept and quality of teachers, and increase the proportion of teachers with innovation and entrepreneurship experiences; And we should change the teaching mode of teachers. We should encourage the education method of indoctrination to be inspired, explored and discussed. In addition, we also emphasize equal interaction between teachers and students. Students can cultivate their independent thinking ability and enhance their independent innovation ability; In the teaching evaluation system, we should also carry out reform, teachers should put students' theoretical knowledge, practical experience, as well as the abilities of solve problems into the evaluation system; Continuously increase and strengthen the depth and strength of cooperation between universities and enterprises, and constantly deepen the social functions of universities. Our education and practice works are effective, then our innovation and entrepreneurship are hopeful.

## **2.2 Basic Principles of IE Talents Training Modes**

### **(1) Cooperate to cultivate university-industry cooperation, university-research cooperation**

Only through multi-party cooperation can we cultivate IE talents, and with the participation of the business community, a complete talent training chain can be formed. The collaborative training of production, education and research is the product of the comprehensive development of today's world society, and it is also the advanced mode of training industrial engineering talents. In addition, we also need to establish scientific research incubation bases, so that students' knowledge transformation ability can be grounded. In this way, students' scientific and professional research ability has been trained and also help enterprises to solve practical problems, moreover it's can change the traditional teaching method, then enhance the students' IE awareness and improve their IE ability. For the industry, it can also attract more innovative and entrepreneurial talents.

### **(2) Adhere to the open and innovative mode of running schools**

The traditional teaching model has not adapted to the development of today's society. Only by opening schools can we improve the quality of education, build a perfect talents training system, and completely dismantle the "four walls" of higher education. Training objectives, course content, training process, and "time and space" all need to be open [7-8]. While paying attention to knowledge and skills, it also pays attention to the development of processes and methods, emotional attitudes and values. Teachers and students communicate, share and supplement each other in teaching, then they can achieve mutual learning in teaching.

## **2.3 Exploration of IE Innovative Talents Training Modes**

### **(1) Exploration of inquiry-based teaching mode**

The teaching model of higher education should encourage the mutual growth between teachers and students. In teacher-led fields, the number of core vocational activities discussed increases through problem-based training, and students become the subject of challenging skills. In addition, teachers actively encourage students to take the initiative to find problems, to verify problems, and to find ideas and solutions. What's more, teachers also help students improve their innovative thinking and entrepreneurial spirit in the process of guiding students to discover and solve problems. When teachers accept problem-based teaching, they should establish task-based, theme-based and problem-solvable teaching orientation. In this way, students can taste the joy of education in an atmosphere full of questions, awaken a strong desire for knowledge and creativity in their hearts, gain understanding in an interesting environment, and improve their ability to seek knowledge.

### **(2) Heuristic teaching**

Heuristic teaching is a popular way to promote IE. Teachers direct students in accordance with their actual level and local conditions. In addition, a variety of learning methods are used to provide IE knowledge and develop students' intellectual and business potential. Through heuristic education, students' enthusiasm for learning is constantly promoted, and the traditional teaching mode is transformed into a process of positive thinking and practice, then the students love to think, love to write. Of course, heuristic teaching has high requirements for teaching management, and even requires teachers to carefully prepare questions and guide students to think carefully. Finally, students can master real IE abilities. At the same time, it also enhances the interaction between students and teachers. [9-10].

### (3) Use of question-based teaching

The problem-based teaching method is to organize teaching materials with the problems as the center. Through independent learning, students can answer the questions raised by the teacher, the teacher should guide and support the students appropriately. Students can set small goals and divide the goals into a team, and it will conduct in-depth research and solve the problems. In such a team, the frequency of cooperation among students is constantly enhanced, the opportunities for students to learn from each other are increased, and the ability to cooperate among students is also greatly improved. In the problem-based teaching mode, the interaction between students and teachers is more frequent, and the requirements for teachers are relatively high. Due to the freedom and uncertainty of students asking questions in class, teachers must make full preparations for lessons [11-12].

## 2.4 Innovation of Entrepreneurship Education in Colleges and Universities Based on K-means Clustering Algorithm

With the help of k-means model, college students can timely master entrepreneurship policies, have the ability to take risks, and develop correct outlook on life and values.

### (1) Purity evaluation method

Purity method is a very simple clustering evaluation method. It mainly calculates the proportion of correct clusters in the total number of data. The formula is as follows:

$$\text{purity}(X, Y) = \frac{1}{n} \sum_k \max_i |x_k \cap y_i| \quad (1)$$

where  $x=(x_1, x_2, \dots, x_k)$  is the set of clusters.  $x_k$  represents the set of the  $k$ th cluster;  $y=(y_1, y_2, \dots, y_k)$  represents the set to be clustered,  $y_i$  represents the object of the  $i$ th cluster;  $n$  represents the total number of clustered set objects.

### (2) RI evaluation

The RI method uses the principle of permutation and combination to evaluate the clustering. The formula is as follows:

$$RI = \frac{R+W}{R+W+D+W} \quad (2)$$

In the formula, R means that the two samples that are classified into one class, and they are correctly classified; W means that two objects that should not be clustered in one class, they are also correctly separated; M means that the two objects that should not be clustered into one class, they are wrongly placed in one class; D means wrongly separating objects that should be in one class.

### 3. The Practice of IE Talents Training Modes and Schemes

#### 3.1 Curriculum Practice to Consolidate Basic Theory

Practical courses are built on the basis of specialized courses. Teachers plan activities according to their own research direction and educational content of training activities. Its purpose is to solve complex problems, cultivate the skills of English professionals through practical school practice, increase students' interest in training activities, and enable students to experience occupation and training as soon as possible. Practical training activities, such as teaching methods, can help students gain a deeper understanding of the science. Compared with simple words, language or pictures, the practice is clear and personalized, so that students can truly understand the behavior of cultivating their various skills, arouse students' interest in vocational courses, make students experience professional courses as soon as possible, ask new questions, and promote the collection and digestion of theoretical knowledge.

#### 3.2 Innovative Practice in Real Production Environment

The model of industry-university-Research collaboration to cultivate IE talents is a common reform of higher education mode. IE talents are currently implemented in colleges and universities all over the world, so that students can better understand the social environment; master the latest development trends of relevant industries; cultivate practical and engineering abilities; improve comprehensive quality; transform potential productivity into actual productivity. In addition, enterprises can also be endowed with abundant social benefits to enhance the soft power. Therefore, with the continuous expansion of the enterprise, it will attract high level talents, and they will continue to promote the development of the enterprise, thus forming a good business cycle.

### 4. Students' attitudes and Views on the Cultivation of IE Talents

#### 4.1 Attitudes and Opinions of Students on Professional Talents Training and Teaching Methods

Table 1: Opinions of current students on talents training

	man student	woman student
Single form	35.3	33.5
Lack of management	25.2	23.9
Lack of guidance	27.3	26.6
Participation is not high	18.1	25.2
inadequate	33.2	32.2
Not rich enough	35.1	34.4

In the various practice or internship activities arranged by the school, 64.50% of the students said they liked it very much, but only 42.54% of the students thought that the effect of these exercises or internships was good, 69.50% of the students thought that "the internship platform is not rich enough", 68.80% of the students thought that the internship form is too simple, and 65.40% of the students thought that "the practice content is not perfect enough". The survey results are shown in Table 1.

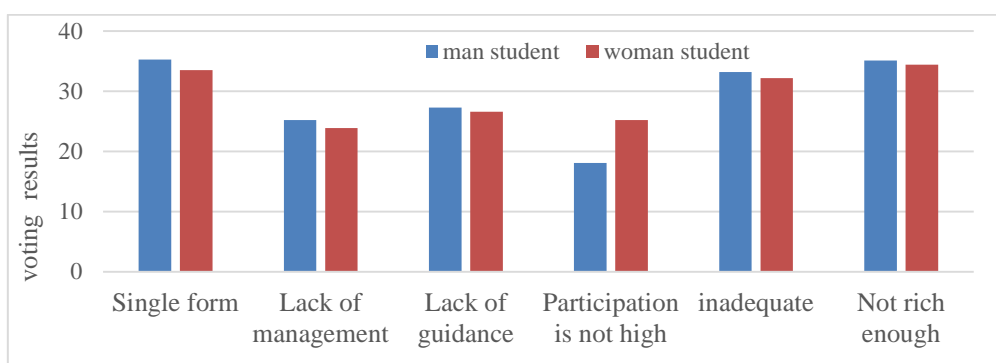


Figure 1: Opinions of current students on talents training

Specifically, as shown in Figure 1, 125 people think that the degree of participation in professional talent training and teaching methods is not high, accounting for 43%, but less than half. Compared with the students who have participated in the practice courses of professional talent cultivation, more than 65% of students think that the form of practice activities is single, the practice content is not perfect, and the practice platform is not rich enough. In comparison, the proportion of participation is very low.

#### 4.2 Reasons for Students Participate in the Cultivation of IE Talents

The reasons for their participation in innovative practice activities are shown in Table 2. 63% of the students said "in order to exercise more strength", 46. 7% of the students said "in order to research or find a good job", 36. 6% of the students said "Teachers, classmates or parents ask me participate". In addition, there are still many students who said that they participated in order to get scholarships, to obtain innovation credits, or because other people participated. The details are shown in Table 2.

Table 2: Reasons for Undergraduate Students to Participate in Practical Activities

	man	woman
Everyone else attended, and I did	12. 5	11. 2
Teachers, classmates, or parents asked me to attend	16. 3	20. 3
Personal love of the activity content	18. 5	11. 2
Exercise yourself to improve your ability	35. 1	27. 9
To make even more friends	13. 3	10. 2
In order to protect the research institute or do a good work	20. 5	26. 2
In order to get a scholarship	10. 3	20. 5
To get the innovation credits	13. 4	13. 5

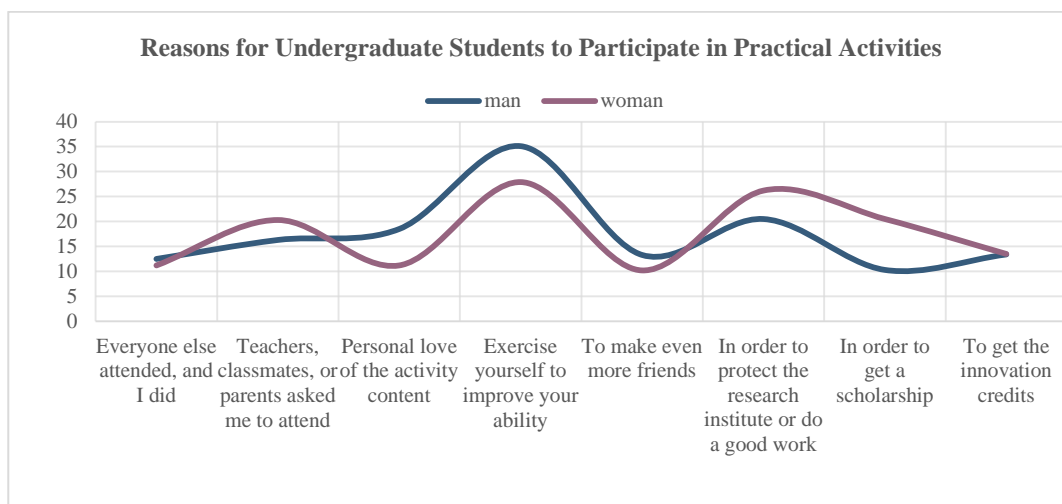


Figure 2: Reasons for Undergraduate Students to Participate in Practical Activities

Specifically, as shown in Figure 2, more than half of the students take part in practical activities to exercise and improve their personal abilities, accounting for 64%. For personal development in the long run, it is better to find a good job or secure research. Compared with the number of people who simply like the content of the activity, the proportion is very low, only 29%. It also truly reflects that the practical activities are not rich and interesting enough to attract students, but other factors can stimulate students' interest in participation.

## 5. Conclusions

Through the in-depth design and research on the IE training mode of English majors, it is urgent for colleges and universities to effectively serve students and the society in curriculum setting, then we need focus on core competencies and comprehensive qualities. In accordance with the requirements of the talents training schemes for English majors, the relevant theoretical teaching methods and practical teaching modes are constructed, industry-university-research cooperation pattern and IE talent training mode are implemented. At the same time, the teaching content is rich, the teaching form is diverse, and the students' participation is also increase.

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