

## Enterprises Selection and Assessment in Joint Cultivation of Information Management and Information System Specialty under “Excellent Plan”

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**Abstract:** Based on the model of university-enterprise cooperation put forward in "Excellent Talents" programme and combined with the characteristics of the major of Information Management and Information System, this paper investigates the views of the students of Information Management and Information System specialty on the university-enterprise joint cultivation, analyzing the present situation of university-enterprise joint cultivation in colleges and universities, using the successful experience of university-enterprise joint cultivation in colleges and universities for reference and probing into the principle of the selection of cooperative enterprises, the maintenance plan of enterprises, the mode of cooperation between universities and enterprises and the way of assessment.

### 1. Introduction

In 2010, the Ministry of Education of the People's Republic of China put forward "A Plan for Educating and Training Outstanding Engineers", aiming at cultivating a group of engineering and technical personnel with great innovative ability and adaptability to the rapid developing society. As a compound specialty with multi-disciplinary intersection of modern management science and computer technology, the subject of IMIS has high requirements for students' engineering and technical ability. The current curriculum of the IMIS focuses on imparting students' theoretical knowledge, which is weak in the training of students' practical ability of projects, so it is necessary to implement "Excellent Plan for Educating and Training Outstanding Engineers" and train "Excellent Talents". Moreover, the key to the success of "Excellent Plan" lies in university-enterprise cooperation, and the way to select suitable enterprises and take appropriate joint cultivation mode and scientific assessment of enterprises is an important part in the "Excellent Talents" cultivation in the field of IMIS.

### 2. Students' understanding and expectation of university-enterprise joint cultivation

In order to understand students' views on university-enterprise joint cultivation, we issued a total of 100 questionnaires to different grades of IMIS in W university randomly, recovering 100 effective questionnaires, with 100% recovery rate. Questionnaires contain four aspects of questions: students' own ability, the choice of joint cultivation enterprises, students' expectation on enterprises' way of cultivation and the benefits to be gained from university-enterprise joint cultivation, thus acknowledging students' views on university-enterprise joint cultivation comprehensively.

#### 2.1. Cognition of their own ability

From the statistical results, professional skills, independent learning awareness, teamwork and communication skills are considered to be the most essential ability that students of IMIS should

own, with 93%, 91%, 83% students' choice, respectively. From this, it is generally believed that the requirements of the professional skills is relatively high for IMIS, furthermore, the knowledge of IMIS involves computer, which is updating so rapidly that we are supposed to have a good sense of independent learning at the same time, keep up with the pace of the times and avoid being eliminated in the fierce competition. Meanwhile, 68% of students think they are lacking professional skills, 45% of students think that there is a lack of teamwork and communication skills, and 41% of students think that there is a short of self-learning ability. In terms of the most important quality that students believed, it is also the most absent, which proves that students of IMIS need to strengthen their professional skills urgently. In the process of practice, the adoption of group in completing the task is a great way to train students' team cooperation and communication ability.

## **2.2. The choices of joint cultivation enterprises**

For the choices of joint training enterprises, 75% of students wish universities and Internet companies to carry out joint cultivation, while 16% of students wish universities to carry out joint cultivation with ERP software companies. Students' choices of the company are consistent with the cultivation objectives of IMIS, and students involved in such companies are better able to exert their expertise to specific projects. In specific engagement, 53% of students choose technique development, 46% of students choose product operation, 44% of students choose data acquisition/analysis, 18% of students choose the system implementation, these positions that students want to participate in are highly relevant to the major of IMIS. The project experience gained in joint cultivation is of great benefit to future employment.

## **2.3. Students' expectations on enterprises' ways of cultivation**

In the way of enterprises' cultivation to students, 77% of students choose to be given internship positions, 54% of students choose enterprises to provide practical opportunities for students with actual project drive, 45% of students choose to participate in the internal personnel training, 42% of students choose long-term guidance training on specific job requirements which are in accordance with the corporate culture. In the internship time, 61% of students hope the enterprise internship last 3-6 months. From this, it can be seen that a fixed period of post internship combined with enterprise teacher training is the most expected cultivation way for students.

## **2.4. The benefits to be gained from university-enterprise joint cultivation**

Most students hope to develop their project practice ability, analytical and problem-solving skills, teamwork and communication skills through university-enterprise joint cultivation. Thus, university-enterprise joint cultivation can bring students extensive knowledge which is rarely involved in the university, and positively help their initial career and future professional development.

## **3. The development experience and inspiration of university-enterprise joint cultivation**

The key to the success of "Excellent Plan" lies in the university-enterprise joint cultivation, the enterprises have the conditions that colleges and universities do not possess: advanced facilities and technology, experienced staff and real project environment. Colleges and universities should carry out cooperation with enterprises actively, cultivating talents who meet the needs of the society. At present, many colleges and universities have adopted a variety of forms of university-enterprise joint cultivation, such as the signing of joint cultivation agreement between Tongji University and Shanghai Volkswagen group is to integrate students' internship with graduation design, shorten students' work adaptation cycle, meeting the enterprises' human resources competition needs; the signing of joint cultivation agreement between Central South University and Guangzhou Railway Group is to develop professionally senior technology and management talents who can enter the first line to work and have adaptability. Meanwhile, there are many colleges and universities also set up engineering practice education centers, which can further strengthen the management, expand

the function, providing students with cultivation platform of engineering talents for closely cooperation with enterprises.

In the choice of cooperative enterprises, domestic related fields of well-known software enterprises are mostly chosen by IMIS students, having long-term contacts with colleges and universities or becoming students' practice bases, thus professional teachers can have deep connection with enterprises on information system software projects and establish favorable cooperative relationships. During students' learning process in the enterprises, enterprises can make a whole of supervision and assessment by combining the stage summary, learning summary, project report and other means of investigation together.

#### **4. Construct the selection standard and maintenance scheme of enterprises**

##### **4.1. Selection of enterprises**

Whether the enterprise is suitable or not determines whether the students can really benefit from the joint cultivation, so the selection of the joint cultivation enterprises is a crucial link. In the choice of enterprises, there are several important standards as follows:

##### **4.1.1. Enterprises have an understanding of "Excellent Plan" and joint cultivation**

Choosing to cooperate with enterprises with an understanding of "Excellent Plan" and joint cultivation can improve the success rate of joint cultivation, and enterprises will be willing to invest more resources in it, and the universities and enterprises will be more harmonious in the process of choosing joint cultivation mode and implementing specific joint cultivation plan.

##### **4.1.2. Enterprises take leading positions in the industry**

Choosing the leading enterprises in the industry can, on the one hand, increase the enthusiasm and cooperation of students in joint cultivation, on the other hand, the leading enterprises in the industry will have more outstanding engineers, practical projects, work experience, cutting-edge technology and other resources, providing students with more abundant teaching and training conditions.

##### **4.1.3. Enterprises have technology and attach importance to technical personnel**

The point of "Excellent Plan" is on the development of engineering talents, so it is particularly important for enterprises to attach importance to technology. In the technology-focused enterprises, with high-tech engineers, students in the enterprise can follow the engineers to learn technology, experience and other comprehensive skills, and paying attention to the training of technical personnel indicates that enterprises will be willing to spend more resources into the joint cultivation of students, so that students' technical level can really get promoted.

##### **4.1.4. Enterprises have comprehensive strength of joint cultivation**

Enterprises should also have a relatively good development in the management norms, laws and regulations, the implementation of equipment, social responsibility and other comprehensive capabilities, so as to provide students with a good learning environment and sufficient resources.

##### **4.2. The maintenance of enterprises**

In order to enable the university-enterprise joint cultivation to achieve a long-term state of stable cooperation and development, universities need to take some measures to maintain the relationship with cooperative enterprises, so that the university-enterprise joint cultivation can be carried out sustainably in a good environment. The main schemes adopted are as follows:

##### **4.2.1. Give full play to professional advantages**

Strengthening professional training, improving the universities' professional teaching ability and giving full play to professional advantages are the most basic requirements. In the universities' continuous progress in the professional training, students' technical level and comprehensive ability

will be more and more in line with society and enterprises' needs for talents. When universities have cultivated high-quality personnel, the cooperative relationships between universities and enterprises will be firmly enhanced.

#### **4.2.2. Strengthen communication and adopt diversified modes of cooperation**

In the process of university-enterprise joint cultivation, it is inevitable that there will be some contradictions and problems, thus universities should strengthen communication with enterprises and solve problems in time, formulate a distinctive mode of cooperation according to the actual situation of universities and enterprises, making universities, enterprises and students satisfied.

#### **4.2.3. Universities and enterprises are mutually benefited and in win-win relationships**

Universities should take enterprises' efficiency into account. In the process of university-enterprise joint cultivation, not only enterprises can make a profit, gaining a certain amount of labor resources and human reserve resources, but also students can really acquire the practical experience of the project in enterprises and improve their own technical level and comprehensive quality, truly achieving win-win cooperation.

### **5. Choose the suitable diversified joint cultivation mode**

According to the existing development experience, there are many favourable university-enterprise joint cultivation modes. Selectable options of university-enterprise joint cultivation modes for IMIS are as follows:

#### **5.1. Establish an Advisory Committee on the teaching of enterprise experts**

Measures such as hiring technical experts and senior managers of enterprises to establish an Advisory Committee on the teaching of experts together with university teachers, and participating in the formulation of professional cultivation objectives and plans, clarifying professional orientation, improving teaching programs and content can be employed to cultivate application-oriented talents of IMIS guided by social needs and understand the trend of social needs in real-time, ensuring the feasibility and leadership of the implementation of the professional cultivation program.

#### **5.2. Hire technical experts of enterprises as part-time teachers**

Universities can hire senior technical personnel with rich practical experience to serve as part-time teachers in colleges and universities, set some forefront courses about professional technology and lectures about professional knowledge, as well as seminars for career development, etc., thus developing the students' professional cognition and enabling students to understand the society's demand for professional talents and clear their professional development goals and plans as soon as possible.

#### **5.3. Replace the university curriculum with students' skill training in enterprises**

In the 6<sup>th</sup> semester, students can choose to conduct skills training in enterprises and participate in the actual project, learning and applying skills which must meet the training needs of the cultivation plan for the students firstly and can replace the corresponding courses in the cultivation plan. Meanwhile, enterprises also have sufficient equipment conditions and teaching level, thus students can go to the enterprises to receive skills training and make credit replacement of corresponding courses in the universities when passing the assessment of the enterprise.

#### **5.4. Students take post practice and complete the graduation design**

In the 7<sup>th</sup> and 8<sup>th</sup> semester, students will take post internship in enterprises, fit into the same project environment as the enterprise staff, and complete various tasks the job required, which on the one hand strengthens the students' mastery and application of knowledge and skills, on the other hand, exercises students' environmental adaptability and team communication skills and cultivates

students' sense of responsibility, enabling students to grow rapidly. Finally, based on the actual projects of the enterprises and jointly guided by the tutor of the enterprises and universities, students can complete their graduation design.

## 6. Establish a scientific enterprise assessment and evaluation mechanism

Enterprises' assessments are divided into the assessment of enterprises and the assessment of enterprises' mentors.

Table 1 Enterprise Appraisal Form

First-Degree Criteria	Second-Degree Criteria
Operation of the Enterprise	The enterprise is operating well and developing gradually.
Cooperation of the enterprise	Enterprise cooperates with the university to carry out practice with positive cooperative attitude and enthusiasm.
Cultural atmosphere of the enterprise	The enterprise's culture atmosphere is positive with responsible staff and a well-communicated team.
University's satisfaction with the enterprise	School tutors and students have no strong negative evaluation of the enterprise, expressing satisfaction with the whole internship.
Completion of the internship mission	Students can complete the internship program in the enterprise successfully, and enhance their own technical capabilities.

The assessment of the enterprises mainly includes the enterprises' operation, trainee students' reception situation, internship tasks' completion and students and the teachers' satisfaction to the enterprise, etc., so as to ensure the suitability of the enterprise to continue to cooperate with the university on university-enterprise joint cultivation. The college should report the work summary of the university-enterprise joint cultivation every year, reflect the achievements and problems in the university-enterprise joint cultivation, and evaluate the grade of the enterprises' inspection results with the combination of the evaluation results, in which case, unqualified enterprises will be eliminated. In the process of assessing the enterprises, the universities should reflect on the university-enterprise joint cultivation mode, analyze the existing advantages and disadvantages of the cultivation mode, and put forward suggestions for improvement constantly.

Table 2 Enterprise Tutor Appraisal Form

First-Degree Criteria	Second-Degree Criteria
Ideology and morality	Have good sense of ideology and morality, professional quality, love and dedication for work, and engineering ethics.
Job quality	Have clear expression ability, good interpersonal relationship and undertake responsibility bravely.
Teaching preparation	Have a clear teaching plan and implement the teaching link fully.
Professional knowledge and skills	Have solid professional basic knowledge, engineering experience, be familiar with professional norms, and have the ability to solve practical engineering problems and engineering design capabilities.
Teaching skills	Create the open teaching environment, stimulate students' enthusiasm for practice, offer students appropriate support and help, cultivate students' ability of independent thinking, decision-making and work.
Teaching results	Students have improved their engineering ability and technical knowledge, and completed the internship program.

The assessment of the enterprises' tutors mainly lies in the actual engineering ability, the guidance ability, the coordination communication ability and responsibility. Whether the university-enterprise joint cultivation can be carried out smoothly or not is closely related to the work enthusiasm of enterprises' tutors. In the assessment of enterprises' tutors, on the one hand, we should pay attention to the assessment of their guidance ability for students' internship and their own engineering ability, on the other hand, it is necessary to assess their positivity and sense of responsibility. We should understand the contradiction between the enterprises' tutors and the universities from the assessment and find ways to solve it. Stimulating their work passion is



necessary to cultivate "Excellent Talents" in high-quality way. Similarly, for enterprises' tutors with low enthusiasm or insufficient engineering ability, they will be eliminated when not qualifying the assessment.

## 7. Conclusion

For IMIS, the university-enterprise joint cultivation can strengthen the cultivation of students' engineering, practice and innovation ability. Meanwhile, it is also a win-win strategy for both enterprises and colleges. The enterprises undertake the responsibility of project practice teaching to the students. Only universities choose the suitable cooperative enterprises can they stabilize the cooperative relationships, deeply develop the university-enterprise joint cultivation, thus developing talents who meet the social demands. This paper studies how to select enterprises, maintain relationships with enterprises and evaluate enterprises in the university-enterprise joint cultivation. However, the university-enterprise joint cultivation is a subject worthy of deepening, and colleges and universities can constantly innovate the mode of cooperation according to the professional advantages of themselves, and cultivate high-quality professionals of IMIS with practical experience in accordance with the model of joint running and co-education.

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## References

- [1] Lin Jian. (2010) The Development of General Standards for "A Plan for Educating and Training Outstanding Engineers". *Research in Higher Education of Engineering*, 4, 21-29.
- [2] Lin Jian. (2017) New Engineering Disciplines Construction: A Updated Version of "the Plan for Educating and Training Outstanding Engineering" with a Strong Effort. *Research in Higher Education of Engineering*, 3: 7-14.
- [3] Lin Jian. (2013) The Quality Requirements of "A Plan for Educating and Training Outstanding Engineers" and Engineering Education Accreditation. *Research in Higher Education of Engineering*, 6:49-61.
- [4] Tong Yuerong. (2016) The Exploration and thinking of the University-Enterprise Joint Cultivating Outstanding Engineering Talents. *Higher Education in Chemical Engineering*, 1, 13-17+25.
- [5] Zhao Chen. (2011) Research on talent cultivation system of Information Management and Information System. *Chinese Electronic Commerce*, 10, 135-135.
- [6] He Haiyan. (2011) On the choice of joint enterprises in the cooperation between universities and enterprises. *Jin Ri Hu Bei*, 11.
- [7] Zhao Jiaojie, Wang Jingjing. (2014) Innovation Talent Cultivation Model for Information Management and Information System Specialty. *Journal of Shenyang Normal University (Natural Science Edition)*, 2: 313-316.
- [8] Zhao Lilin. (2016) Thoughts on the Training of Personnel in Information Management and Information System Specialty Based on the Analysis of Market Demand for Talents. *Course Education Research*. 22:18-18.
- [9] Wang Hongqing, Wang Yuyuan, Wang Guoping. (2014) Exploration and Practice of Student Internship Evaluation System under "the Plan for Educating and Training Outstanding Engineers ". *University Education*, 10: 111-112.