# A Study of College- Enterprise Cooperative Major Teaching Model and SPSS Teaching Effect Analysis

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*Abstract*-It is a major issue for independent colleges to foster eligible applied technique-oriented professionals accepted by the society. The paper studies the cooperation of college and enterprises in computer science and technology major and its effect. By exploring the teaching planning, course setting and teaching practice, it put forwards a set of feasible teaching model.

Keywords–Independent College; college-enterprise cooperation; curriculum system; teaching model

### I. INTRODUCTION

In a speech made by Lu Xin, the vice minister of Education Ministry, in China Development Summit Forum in March, 2014, he urged that over 600 regional colleges should transform themselves into applied technique-oriented or vocation education-oriented ones<sup>[1]</sup>, which happens to represent the training goals of independent colleges. Over a long period of time, colleges in China overemphasized the implantation and accumulation of knowledge as well as the systematicness and integrity of subject knowledge while neglecting the training of students' abilities<sup>[2]</sup>. Times calls for colleges to bear partial social functions such as technology development, technology transfer and technical service and to plunge into economy building by integrating themselves with education, scientific research, production and service under an effective mechanism so that they can expand their advantages of self-development, strengthen their competitiveness and accelerate their paces in training applied professionals <sup>[3-4]</sup>. College-enterprise cooperation is a new pattern. In a broad sense, it is a mode for educational institutions and enterprises to cooperative with each other in students training, scientific research and technical service <sup>[5]</sup>. Enterprises represent the main body demanding the applied engineering professionals. As they know best their development and their industries, they have the clearest objectives for professionals they need.

#### II. COLLEGE-ENTERPRISE COOPERATIVE TRAINING MODEL

The training model of computer science and technology major under the cooperation of our college and enterprises can be simplified as 2+1+1. Teachers conduct their teaching in the first two years and part of the basic courses of the major will be taught so as to enable the students to have enough time to undertake targeted major-oriented learning. In the third year, some advanced trainers from enterprises will conduct the teaching with the assistance of the teachers from our colleges. Major-oriented courses will be taught and

practical training will be implemented under the guide of introduced projects. Trainers for enterprises will adjust teaching and training contents and combine digital teaching system with classroom teaching to meet the demands of society. In the fourth year, students will undertake the practical training in enterprises. Enterprises will work out a three-month job simulation for students. Divided into several teams, students are required to complete a practical project offered by enterprises in a set mode. The training project will be used as students' graduation project and students will accomplish it in the three months. College teachers will guide them to finish graduation thesis or project report. The college-enterprise cooperation in students' graduation project establishes a new teaching environment which breaks the traditional model. It makes up the lack of practicability of traditional graduation projects and proves effective in improving students' innovativeness, awareness of innovation and comprehensive abilities. In the second half of fourth year, students will work as interns in different posts offered by enterprises. Most of them will become a member of the staff and get themselves employed.

# III. CURRICULUM CONSTRUCTION

The principle by which the college-enterprise major curriculum is built can be summarized as "highlighting skills training while imparting adequate theoretic knowledge". The content of the curriculum can be characterized as "little, new, refined". The curriculum is implemented in modules, which means courses with similar features or functions are set in a course unit module. Therefore, students can build their own curriculum according to their individual needs. With the flexible curriculum, nuclear module and major-oriented module can be constructed upon the basic courses. The curriculum includes general education courses, basic courses and major-oriented core courses. Original optional courses can be replaced by courses conducted by enterprise, project training, curriculum design and comprehensive design.

#### A. Constructing Modular Curriculum Platform and Establishing Feasible Theoretical Knowledge System

Curriculum platform includes all the basic courses, consisting of fundamental courses platform, basic courses platform, major-oriented core courses platform and enterprise's training platform. The first three platforms are constructed by college teachers. Major-oriented core courses includes network programming, microcomputer principle, database principle, operation system, computer network security and software engineering, based on which follow-up enterprise core courses are conducted. Enterprise core courses highlight students' ability to develop software of computer science. Aiming at engineering practice, a comprehensive curriculum system is built with database developing technology, Java programming, web developing, project developing and project training as its nuclear core. In this platform, professional trainers and technical staffs from Daren Science and Technology Group are responsible for the textbooks, courseware creation and other teaching activities. It lays stress on students' practical ability.

# B. Optimizing Practice Platform and Propelling the Practice Teaching Reform of Computer Science Technology Major

Firstly, we will take advantage of the resource in the lab and rid all the drawbacks of traditional lab courses.

Assignments are given to students in advance and students are divided into groups in lab courses. At the beginning of the lab course, students are required to validate basic knowledge. In the middle period, students are asked to design the task. In the final part, students will conduct a comprehensive design. Students will solve all the problems by themselves and no solution is given to the assignment, the requirement of which is conceptual. In this way, students' subject initiative will be given full play.

Secondly, enterprise will build a training base in college and develop a complete training platform. In the third year, enterprise will motivate students to accomplish projects and offer major-oriented courses so as to improve their engineering qualities. From the summer vocation in the third year, students will spend three months in the training base. Enterprises will assign workable tasks to students. With their enthusiasm and imitativeness stimulated and their comprehensive abilities strengthened, students will achieve a

TABLE III.

true understanding and mastery of all courses and fill in the post offered by the enterprise.

# IV. SPSS TEACHING EFFECT ANALYSIS OF COLLEGE-ENTERPRISE MAJOR

A questionnaire survey was conducted for graduates in 2015 and seniors in college, the purpose of which is to check the effect of the college-enterprise cooperative teaching. College-enterprise Cooperative Teaching Effect Questionnaire for Computer Major Students is designed by the author and group test method is adopted

Statistical Result and its Analysis Statistical Result and its Analysis

#### A. An Overall Information

#### TABLE I. SEX BACKGROUND

Sample	frequency	percent	Valid percent cumulative percent
Male	67	81.7	82.7
Female	14	17.1	17.3
Valid Total	81	98.8	100.0
Deficiency	1	1.2	
total	82	100	

TABLE II.CLASSES OF THE MAJOR

Sample	frequency	percent	Valid percent	
Grade 11 computer	40	48.8	53.3	
Grade 11 information	18	22	24	
Grade 10 computter	17	20.8	22.6	
Deficiency	7	8.4		
Total	82	100.0	100.0	

	N	Minimum value	Maximum value	Average value	Standard deviation
motivated by the teaching plans of the major to pursue study	82	.00	100.00	13.4146	34.29068
Motivated by teachers of the major to pursue study	82	.00	100.00	10.9756	28.71499
Expecting to improve learning atmosphere	82	.00	100.00	10.5691	29.10557
Enriching myself by reserving knowledge	82	.00	100.00	13.0081	33.43856
Unwilling to accept the job offered by Daren in Hangzhou	82	.00	100.00	6.5041	23.09343
Better than idling away in dorms an blaying computer games	82	.00	100.00	14.2276	31.44027
Γο meet the demands of professional raining	82	.00	100.00	2.8455	14.99997
other	82	.00	100.00	6.0976	22.90797
valid N (status)	82				

DESCRIPTIVE STATISTICS

#### B. Quality analysis of the questionnaire

		N	%
cases	valid	54	65.9
	excluded	28	34.1
	Total	82	100.0

TABLE IV. A SUMMARY OF PROCESSED CASES

Table IV demonstrates that valid questionnaire information is obtained from 54 copies, accounting for 65.9% of the total. In following table, the overall reliability of questionnaire is 0.902, which indicates that questionnaire scale and its structural design is excellent and data information from it is reliable.

TABLE V	AN ANALYSIS OF (	DUESTIONNAIRE V	ALIDITY AN	DRELIABILITY
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An overall analysis of validity and reliability	Scale construction reliability Reliability Statistics			Scale construction validity KMO and Bartlett's Test		
Statistical analysis of validity and reliability Scale construction items	questionnaire Cronbach's α	Reliability based on standard itemsα	N of Items	KMO value	Bartlett's Test of Sphericity	Sig
Questionnaire as a whole	0.902	0.906	33	0.549	1422.106	0.000
1. Frequency of engagement in teaching activities	0.752	0.718	10	0.727	328.423	0.000
2. Faculty of enterprise	0.676	0.718	5	0.717	104.241	0.000
5. Stimulation by studying in enterprise	0.920	0.921	11	0.863	545.781	0.000
6.self-perception after receiving cooperative training	0.895	0.896	5	0.817	236.195	0.000

### C. Result Analysis

An SPSS analysis of the questionnaire reveals that there are both advantages and disadvantages of college-enterprise cooperative running for undergraduate students to pursue study. As for advantages, students have clearer learning objectives, more definite requirements for themselves and better readiness for future career. The disadvantages come from the adverse problems in the questionnaire. As students have stated in discussion meeting, their expectations to pursue knowledge in college are not fulfilled and they feel a sense of loss, which also represents the advantages of graduate education compared with vocational education and profession training. In other words, we need to rid the drawbacks of training model of graduate education within the college, make up the imperfect aspects and improve talent training mode of computer science and technology major.

#### V. CONCLUSION

College-enterprise major training proves to be an effective mode to train applied technique-oriented students. However, it deserves our further study and exploration to

have undergraduate students master professional ability, foster their follow-up study ability and cultivate their humane qualities.

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