Research on cultivating employment competence of students in applied engineering universities

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ABSTRACT: The issue of employability of college students has become increasingly prominent with the popularisation of higher education in China. It is crucial to cultivate the employment competence of college students from the perspective of schools and students. The characteristics and current employment competence of college students in applied engineering universities were analysed and are presented in this article. Ways to improve the employment competence of applied engineering graduates were demonstrated. First, the model of cultivating innovative and applied talents was created to implement the plan of promoting employment competence of college students and build the scientific curriculum system. Thus, talent cultivation can better conform to society's needs, and students' professional and practical ability can be improved. Second, the college students' employment promotion centre was built to strengthen quality education. Also, the level of humanistic quality, emotional intelligence and innovation ability of applied engineering students have improved.

INTRODUCTION

First proposed by the British scholar Beveridge in 1909, employment competence refers to a person's ability to obtain initial employment, maintain employment and acquire new employment when necessary. An individual can possess the ability to find, keep and succeed in a job after learning. Employment competence refers to the ability to get and continually complete the work [1].

Therefore, the employment competence of college students refers to their individual ability to find, keep and succeed in a job after learning. Students are required to finish training related to employment competence in college. Thus, they can improve their first employment success rate through the systematic *training of first employment competence.*

Most students in applied engineering universities possess the professional qualities in various engineering fields [2], but their knowledge structure is too simple without essential social and cultural qualities. Furthermore, they possess the characteristics of being able to apply their talents and practical ability to a professional category job, but they lack innovative ideas [3][4].

ANALYSIS ON CURRENT EMPLOYMENT STATUS AND COMPETENCE OF GRADUATES

Following the expansion of university enrolment in recent years, the graduate employment issue has become important and increasingly prominent [5]. A questionnaire of 2013 graduates was launched in Chinese universities, and their current employment situation and competence were analysed. Approaches to enhance students' employment competence were proposed based on the data analysis [6].

RESEARCH METHODS AND BASIC SITUATION

With universal representation, the research covered students graduating in 2013 from 20 universities with more than 100 majors. The survey included:

1. research purposes and details of samples;
2. the employment situation of graduates in 2013;
3. graduates' career planning in 2013 on school days;
4. graduates' employment problems in 2013;
5. analysis of the employment tendency of graduates in 2013;
6. analysis of graduates' career guidance in 2013.

The survey was based on two methods. One was participatory rapid assessment; whereby, the respondents were asked to choose or sort a set target options according to the situation in their area.

The other method was the use of case interviews. Structured interviews were launched based on the related content of the questionnaire. The survey was conducted from 10 July 2013 to 10 August 2013. 1,000 questionnaires were distributed, from which 952 valid questionnaires were returned, a response rate of 95.2%. Men and women accounted for 52.5% and 47.5% of the respondents, respectively. 53.43% were science students, compared with 46.57% who were arts students. Graduates from ordinary universities accounted for 77.91%, while college graduates from China's premier (Project 211 and 985) universities accounted for 22.09%.

ANALYSIS ON EMPLOYMENT SITUATION AND TENDENCY OF GRADUATES IN 2013

According to the survey, most graduates in 2013 had undertaken career planning, but their employment status was *complicated*. Among the graduates in 2013, 34.23% signed a contract with the employers, while 17.45% chose or pursued further education. Self-employed students accounted for 5.53%, while 27.66% had not signed a contract with the intention of employment. Meanwhile, students who selected the *Others* option that expresses uncertainty accounted for 15.60%. This shows that a majority of graduates in 2013 were formally employed. But well over 30% of the students were not employed, did not want employment or constantly chose the jobs.

Table 1: Current employment status of graduates.

Current status	Proportion
Officially employment	34.23%
Chose or pursued further education	17.45%
Had intention of employment without signing contracts	27.66%
Self-employment	5.53%
Others	15.60%

The survey indicates that 36.50% of the students said their jobs were basically consistent with their professional training. They were directly or indirectly engaged in the jobs with professional components, aided by the specialisations in their studies. 36.01% chose jobs with little contact with their profession, so the specialisations had little impact on their job hunting and employment. Meanwhile, 27.49% of the students said their jobs were not related to their profession and considered their education to be useless.

Table 2: Situation of professional counterparts in graduates' employments.

Item	Proportion
Jobs basically consistent with professions	36.50%
Direct or indirect engagement with professional components	36.01%
Jobs not related to professions	27.49%

Which professions are more likely to lead to finding a job? According to the survey, 38.18% of the graduates in 2013 believed economics would do so, while 33.64% believed science and engineering,10.73% considered management, and 7.27% considered agriculture and forestry. 5.36% thought finding a job to be more difficult for students of literature and history, while 4.82% believed other professions could do so.

Therefore, in students' opinion, graduates from economics, and science and engineering were more likely to obtain employment. Unlike them, graduates without significant professional skills and majors, such as literature, history and management had relatively weak relevance of their studies when looking for jobs.

Table 3: Professionals that can easily obtain employments according to graduates.

Profession	Proportion
Economics	38.18%
Science and engineering	33.64%
Management	10.73%
Agriculture and forestry	7.27%
Literature and history	5.36%
Others	4.28%

According to the survey, graduates would reluctantly maintain the employment in face of having an uninteresting or unfavourable job. Meanwhile, the people seeking opportunities to change jobs accounted for 65.65%. 16.09% cherished rare jobs, while 9.56% would not accept other than satisfactory employment.

The graduates who selected *Others* accounted for 8.7%. According to the survey, 83.75% of the graduates in 2013 had *job-hopping* experiences. This shows that most graduates would *obtain the employment before selection*. With weak professional self-identity, most of them are *ambiguous* and *temporary compromise* in job selection. As a result, a paradox is created for employers - *high employee turnover* and *no hire of employees*.

Table 4: Selection in face of unfavourable jobs.

Item	Proportion
Maintained employment while seeking other job opportunities	65.65%
Cherished the rare jobs	16.09%
Would not accept unsatisfactory jobs	9.56%
Others	8.70%

According to the survey, the reasons for unclear job intentions vary. 43.37% of the graduates had no work experience. 34.69% disliked their own professions and looked for the work not built on their professional training while having no career planning. 21.94% were unaware of their job intentions, how to apply for jobs, lacked employment competence and professional direction.

The main reason for graduates' unclear job intentions was that they were unaware of what employment would be suitable for them. They lacked knowledge about their professions and work, having no direction of employment. Their understanding about what constitutes *ideal employment* is a vague and abstract concept.

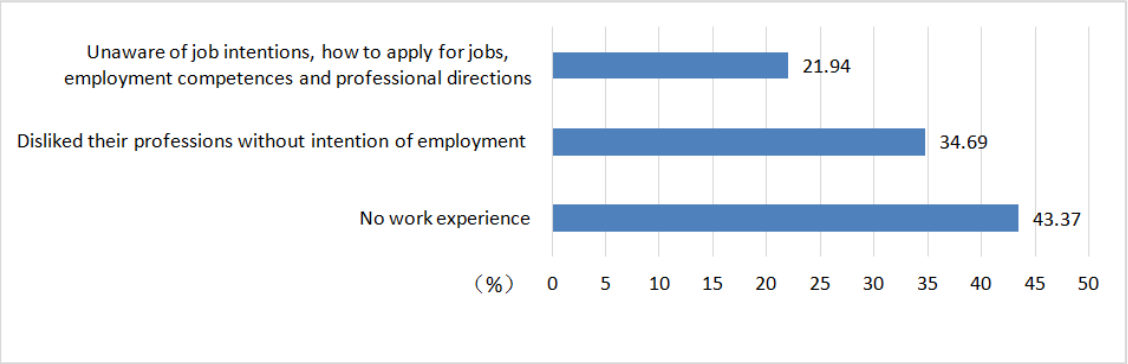

Figure 1: Reasons for unclear job intentions.

According to the survey, 49.56% of the students believed that the main reason for the difficulty for college students in finding employment was their lack of practical skills and experience. 26.55% considered that there were high employment expectations, while 18.58% believed that there was a mismatch between supply and demand.

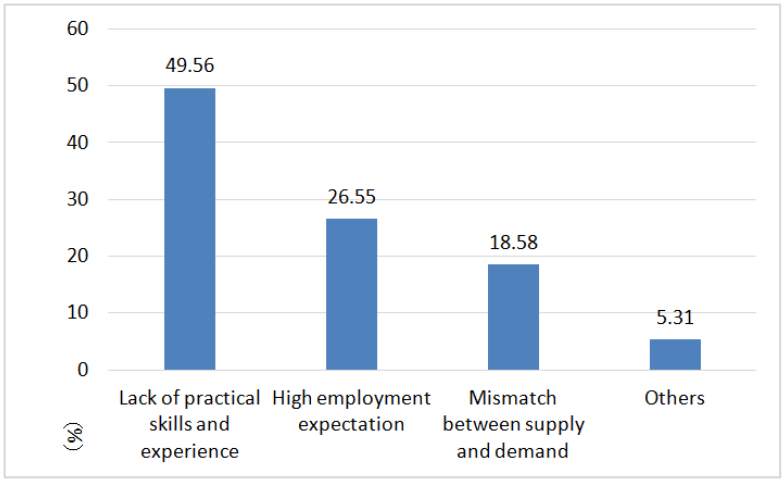

Figure 2: Reasons for difficulty in finding employment of college students.

Recognising the difficulty of finding employment, 39.35% of the graduates believed that personal attitude should be adjusted to reduce career standards. 32.70% considered that the comprehensive cultivation of individual ability should be emphasised in college. 25.40% required schools to provide better career guidance and employment services, while only 2.55% believed that the problems can be solved with policy support. In most students' opinion, the problem of

employment could be solved through personal development. They expected schools to provide more guidance and services.

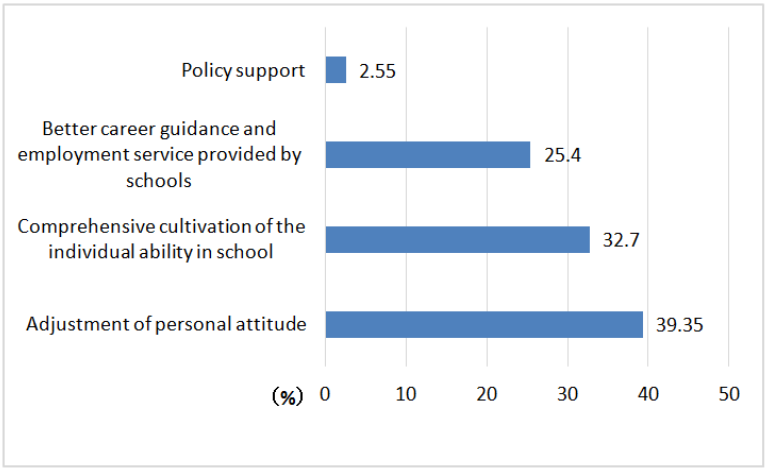

Figure 3: Effective ways of solving problems of employment.

With regards to employment tendency during job hunting, the graduates who considered personal career development accounted for 46.15%, 22.65% thought about future family and life, while 21.37% thought about the prospects of units and economic income. The students who focused on a better chance for further study accounted for 9.83%. In the selection of employment area, up to 31.16% of the graduates in 2013 chose to work in their hometowns and 27.64% chose to work on the southeast coast.

The selection of big cities was significantly higher than that of small cities - 25.13% and 6.53%. The choice of western China was higher than that of villages and towns - 8.54% and 1.01%. To sum up, most graduates would give priority to personal development, including the stability and development of career and family. But their geographical choices are more likely to be hometowns, big cities and developed regions.

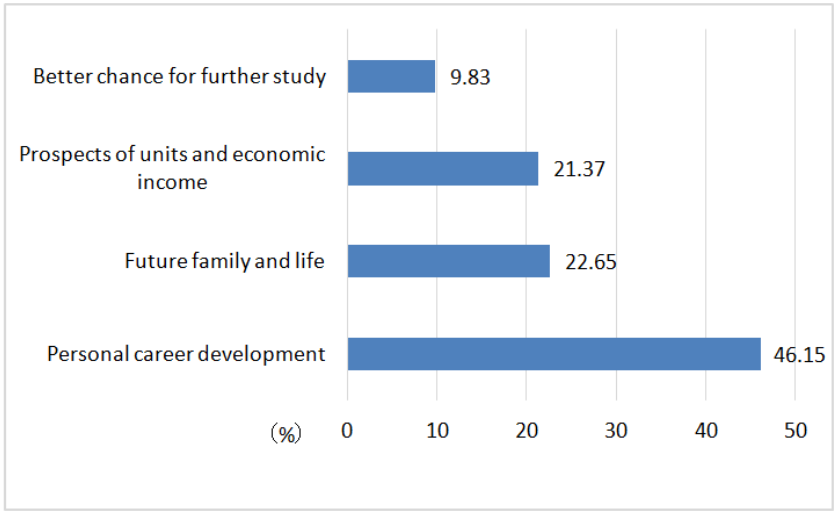

Figure 4: Focus of employment.

CAREER PLANNING OF GRADUATES IN 2013 DURING UNIVERSITY STUDIES

The graduates have to compete with many rivals when selecting an occupation. A résumé alone is not enough if they want to stand out. A sufficient amount of preparation before the interview is the most important step in obtaining employment. Most students in the survey had planned their employment goals. A majority of the graduates were lacking in work experience during job hunting, which is an objective reality in addition to the transformation of role and attitude. Therefore, it is necessary to improve their competitiveness. In college, students should participate in social practice, obtain the relevant certificates and strive for skills training to improve social experience and competitiveness.

According to the survey, 70.27% of the students had planned employment goals and careers in school, while 29.73% had not. However, the students who believed their planning had no practical guidance accounted for 62.3% among the students who had undertaken planning. Most students were aware of the planning for employment goals and career. But it is difficult for ineffective planning to play a practical role in the development of employment and career.

Table 5: Employment goal and career planning of college students.

Item	Proportion
Have not planned employment goals and careers in school	29.73%
Have planned employment goals and careers in school	70.27%

29.83% of the students believed that the ways of improving personal competitiveness are participating into social practice to increase experience. 27.94% considered acquiring the relevant certificates and striving for skills training. In addition, 15.13% and 11.13% thought about expanding social relations and participating in student organisations. Only 10.08% considered taking the effort to acquire professional knowledge, while 5.88% chose *Others*.

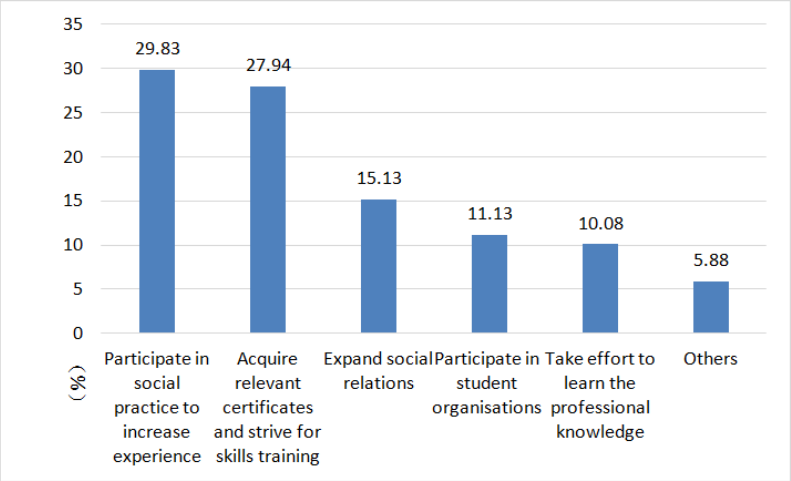

Figure 5: Ways of improving personal competitiveness in school.

In conclusion, current students prefer to improve individual capacity and enhance their professional skills to increase their competitiveness. Higher education only provides basic personal abilities and qualities. Consequently, students learn about a single specialisation, and lack work and interview experience. The deficiency of learning, practical and professional ability and unsuitable market demand result in the competitive and difficult job hunting. In addition to daily learning, it is necessary for college students to consciously learn and enrich their experience, acquiring more expertise. They should develop comprehensive capabilities, such as expression, learning and cooperation.

WAYS FOR COLLEGE STUDENTS TO CULTIVATE EMPLOYMENT COMPETENCE

College life is an important period for career exploration when students gradually acquire independent professional awareness and develop employment competence. Cultivating employment competence in the short term can be beneficial to students' successful graduation. In the long run, it is more conducive to promoting the growth and success of students, helping their lifelong development. Students from applied engineering schools are distinctive. Thus, the means of cultivating employment competence of college students should be explored based on their personality characteristics, laying a solid foundation for their rapid development.

INNOVATIVE MODEL: AN EMPLOYMENT PROMOTION CENTRE FOR COLLEGE STUDENTS

The model of cultivating innovative and applied talent is to build a scientific curriculum system and improve the integration of degrees between talent cultivation and social needs in order to improve students' professional and practical abilities. The purpose of this cultivation is to properly handle the relationship between knowledge, ability and quality. Based on the emphasis of imparting knowledge, students' practical, applicable and innovative ability become the focus of the cultivation. Their comprehensive and coordinated development - knowledge, ability and quality can be sequentially achieved. The course modules should be optimised according to the requirements of training applied engineering talent.

The proportion of theoretical courses should be appropriately reduced, while that of practical and applied public courses is increased. Based on the characteristics of applied talent, the participatory, discussion-based and interactive methods should become a basic form throughout the whole education. Based on the needs of different knowledge and skills, a variety of effective teaching methods are explored. For instance, *the simulation teaching method* is to simulate the environments to be found in factories, offices and companies; in *the project teaching method* students need to complete specific projects or tasks; *the scene teaching method* takes students to a laboratory, training centre or enterprise line for teaching; in *the market research and interview method* students launch social surveys and interview entrepreneurs; *the case teaching method* adopts cases for students' learning, research and training.

Above all, students' main role should be fully exerted, and their subjective initiative for success should be mobilised. Thus, their potential, personality, strengths, professional knowledge and practical ability will be comprehensively improved. Meanwhile, hiring part-time teachers from enterprises and institutions should be increased, especially of senior and highly-skilled people from production and management. Theoretical and practical pedagogical tasks should be held in the form of seminars, teaching, *practicum* and graduation thesis (design). With the introduction of the latest information and appropriate application of technologies in business and society, students' professional and practical skills can meet social standards.

The Employment Force Centre of College Students has promoted the employment and professionalism of students. Jiangsu University of Technology in China, for example, signed a strategic agreement for personnel training with a number of enterprises. The training camp involved more than 5,000 students, who have been paid high salaries and entrusted with undertaking tasks for a range of enterprises. Changzhou Jingxue Freezing Equipment Company, one of the enterprises, enrolled 30 trainees from the training camp, paid them a basic monthly salary of 5,000 Yuan, and paid their tuition fees for four years; Jieji Fruit Chain Co., Ltd. recruited 40 trainees at a starting annual salary of 100,000 Yuan. Employers said that graduates from training camp could be dependable, useful and loyal, providing a new path for enterprises to develop core employees.

DESIGN OF MEANS: PLAN FOR PROMOTING COLLEGE STUDENTS' EMPLOYMENT COMPETENCE

The plan for promoting employment competence of college students is designed to meet the requirements of social development and students' success. It is an effective measure to expand the employment competence of graduates and provide important support for deepening education in *employment competence* in universities. First, the implementation of the plan is useful for promoting the formation of the whole force of quality education based on the cultivation of innovative talent. The plan cultivates students through various courses and training programmes to improve *employment competence*. Students will improve knowledge structure, ability structure, comprehensive quality and employment competence in school.

Second, the implementation of the plan is beneficial in transforming students' attitude towards education of employment competence from passive to active. Carrying out the plan is an important move that can result in tangible careers and provide quality, outcome oriented education. Based on students' needs for success, the plan fully arouses the enthusiasm and self-consciousness of college students in education to provide them with employment competence. Students can clearly understand that both participating in projects and professional learning in class are inevitable parts in school through *Employment Recommendation of College Students*. Consequently, the dominant position of college students in employment competence is enhanced, so are their initiative levels and self-consciousness. The effectiveness of education for employment competence is improved.

Third, the implementation of the plan is conducive to the enhancement of students' self-employed consciousness and ability. The plan is made according to the concept of modern human resources development. Scientific planning, personalised training and comprehensive development are conducted in this plan for cultivating students' comprehensive employment competence. The implementation of the plan is in favour of improving students' ideological and moral quality, scientific and cultural quality, self-employed ability, social adaptability and comprehensive competitiveness in society.

Taking Jiangsu University of Technology in China for instance, based on MyCOS data *Annual Report of Social Requirements and Development Quality of Jiangsu University of Technology in 2013*: 77% of graduates in 2012, who have got jobs, continue with graduate study or study abroad, thought core curricula in the university are more important than current work or study, 3% higher than that in 2011 (74%). 70% of graduates in 2012 thought core curricula to be applicable to current work or study, 9% higher than that in 2011 (61%). The ratios of graduates in 2012 accepting *recruitment organised by the university* and career planning counselling are higher - 48% and 43%, respectively; the ratio for accepting *interview skills coaching* is 14%, and the validity of two years are higher - 85% and 86%, respectively.

CONCLUSIONS

In few words, the difficulty in finding employment for college students occurs for a comprehensive range of factors. The solution fundamentally lies in teaching. The employment competence of students can be improved through the enhancement in education of professional knowledge, personal quality education, career planning, etc. The employment promotion centre can provide a platform for the formation of students' core competitiveness in school. The plan for promoting college students' employment competence is thereby improved. Thus, students' employment competence can be constantly enhanced through launching students' employment training camps, entrepreneurial practice base and *3 + 1* training mode (three years basic learning and one year professional practice).

In the future, Chinese universities should adopt the mode of students' employment union to implement the mechanisms, such as platform, resource and information sharing. Collaborative innovation, school-enterprise cooperation and order training could be launched through regional and interscholastic linkages. They will play an organisational role in

promoting the students' employment promotion centre, planning and promoting employment competence and developing core employment competence.

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