Discussion on the Mode of Software Engineering Talent Training Based on Emerging Engineering

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ABSTRACT

Analyzes the present situation and the demand in the field of software, probes into the problems existing in the talents training of software engineering, elaborated under the background of the new engineering software engineering professional personnel training mode, from training target, training plan formulation, synergy between colleges cultivate, multi-level practical teaching, strengthening the engineering education accreditation, teacher team construction, teaching quality monitoring system and management system construction and so on several aspects to discussion on the mode of software engineering talent training based on emerging engineering.¹

KEYWORDS

Emerging engineering: project education; talent training; software engineering.

INTRODUCTION

Software industry is the national strategic emerging industries, as well as "Mass entrepreneurship and innovation", it covers the Internet of things, big data, cloud computing and mobile Internet and other high and new technology application. Software engineering in the new situation, how to engineering certification under the new background for the idea, to enterprise demand as the guide, reform and

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optimization software engineering personnel training mode and curriculum system and practice system, deepen the innovation education system, training has strong engineering practice ability and innovative ability of applied talents of excellent software engineering, has become an urgent problem in the software talent training.

PROBLEMS IN SOFTWARE TALENT TRAINING[1-3]

The Existing Teaching Model Is Not Conducive to the Training of Engineering Practice and Innovation Ability

Existing teaching mode is still given priority to, the interpretation of theoretical knowledge, technology, theory teaching and practice teaching independently, and taught by different teachers, theory and practice of separation cause students lack of interest in boring theory teaching, in the study in a passive position, it is difficult to stimulate students' interest in learning, learning after the completion of the professional courses, many students still lack of engineering ability and innovation ability.

Lack of Engineering Education Certification Concept, Talent Training Target Positioning Vague

In the process of software engineering talents training, no engineering education as the root of the personnel training, in the curriculum system setting, practice teaching and the teaching method reform and teaching evaluation are despise even ignore the phenomenon. Many schools have participated in the "excellence initiative", but in determining the training goal is to meet the needs of enterprises and in the field of software, when making professional training scheme, can’t break through the traditional personnel training mode and knowledge structure, still give priority to with subject system, the practice teaching of low and demand from industry, talents training target and business requirements.

The Teaching Quality Control and Guarantee System Is Not Perfect

The evaluation of teaching quality still adopts the method of grading, which is more subjective and difficult to reflect the actual situation. It is difficult to implement systematic monitoring on the process of theoretical teaching and practical teaching, and there is no establishment of a teaching quality monitoring and guarantee system that meets the needs of software talents. In the course assessment, the emphasis is placed on classroom teaching and students' final exam results, and students' professional quality, engineering ability and innovation ability cannot be assessed.
The School-Enterprise Cooperation System Is Not Perfect

Many schools carry out school-enterprise cooperation to educate people, but there are some problems such as insufficient teaching links and poor sustainability in school-enterprise cooperation. For example, the school-enterprise cooperation is limited to the partial practical teaching link and fails to cover the whole teaching system. The main reason is that the teaching funds of local colleges and universities are insufficient or the teaching rhythm of enterprises is not consistent with the training links of school talents, which leads to the incomplete implementation of school-enterprise collaborative education. Secondly, it is because of enterprise faculty or system of colleges and universities, the enterprise did not deeply involved in students, lead to the depth of "industry-university-institute" cooperation was not enough, unable to realize the sustainable, stable university-enterprise cooperation mode.

The Teaching Team Lacks Practical Experience

Most of the university teachers are "academic" teachers, who go from "school to school" and go straight to the podium after graduation. Although I have strong academic ability, I lack professional practical knowledge and engineering practical ability, which is contrary to the goal of cultivating engineering, innovative and applied software engineering talents. Therefore, it is necessary to strengthen the training of "double-teacher and double-ability" teachers.

DETERMINE THE TRAINING OBJECTIVES OF SOFTWARE ENGINEERING PROFESSIONALS

According to the above issues, in accordance with the school location and reference to the project of training applied undergraduate talents education cognition and CDIO outline, relevant standards and requirements from knowledge, ability, quality requirements demand on students' various abilities, such as a detailed characterization, formed a professional accurate, precise objectives clear and capacity requirements of the talents training goal of software engineering.

1) have professional ethics and social responsibility, has a solid natural science knowledge, comprehensive quality, strong innovation consciousness, engineering practice ability, able to provide application oriented solution for complex software engineering problems;

2) Be competent for software engineering related research, design, development, maintenance, management and other work, become the backbone of technology or management, and realize the software system meeting the specific needs of users;

3) Capable of international vision, teamwork and communication management, and cross-cultural communication, competition and cooperation;
(4) Good professional ethics, humanistic psychological quality to meet social needs, and ability to improve independent learning.

IMPROVE AND OPTIMIZE SOFTWARE ENGINEERING TALENT TRAINING PROGRAMS

On the software engineering professional talent training scheme design, software institute established by the enterprise senior technical experts and executives of university-enterprise joint professional teaching steering committee, formulated and revised regularly software engineering professional talent training scheme. To build a teaching system suitable for education training of outstanding engineers and new engineering, that is, to go deep into enterprises and employers, and determine the job scope of graduates. With professional industry analysis method, the software engineering domain knowledge, ability and quality structure, writing software engineering professional knowledge and skill requirements table, and on this basis to develop software professional profession development plan; Established by public foundation courses, professional foundation courses and professional direction course, practice course and the professional practice of "four one" modularized course system and professional training system. The relevant teaching activities combined into different modules, each module corresponding ability training goal, after the students completed a module, you should be able to get the ability. Through the progressive and mutual support between modules and modules, the training objective of this major is realized, and the traditional talent training is transformed from "knowledge-based" to "capacity-oriented".

SCHOOL-ENTERPRISE COOPERATION TO ESTABLISH A CDIO-BASED SOFTWARE ENGINEERING TALENT TRAINING MODEL

In collaborative education between colleges on the basis of combination of CDIO education idea, put forward technical innovation under the knowledge and practice ability, “software+” entrepreneurial ability, professional ability and professional quality, team cooperation and communication management ability training of the new concept of engineering education. With the help of software engineering "3+1" training mode the opportunity, schools and companies in teaching, production, study and research, such as teachers for broader and deeper all-round cooperation, establish joint between colleges training mode of "1331", namely a training target (excellence engineers), three levels (engineering practice ability, innovation ability and professional and entrepreneurial ability, every level of ability level is divided into three level indicators and corresponding level 3 practical project), 3 years studying in school (school supplemented, enterprise) and 1 year in the enterprise (enterprise supplemented, schools). At the same time, and build he applied software engineering talent training base (including base for campus and
outside), complete professional skills training, cognition practice, production practice, graduation practice and graduation design practice and teaching and practice activities, such as teachers' communication.

REFORM THE TRADITIONAL TEACHING METHOD AND STRENGTHEN THE IDEA OF EDUCATION CERTIFICATION

According to the requirements of application-oriented personnel training, the concept of engineering education is adopted throughout the whole teaching process, focusing on cultivating students' engineering consciousness, solving complex problems and applying design ability. "Project type, case type" teaching into full play important role in talents cultivation, driven by projects, problems lead, such as teaching mode, advocate the teaching idea of "students as the center, surrounding the real engineering practice project organization teaching, student driven by use of the project and explore various technical means to complete the project tasks.

SCHOOL ENTERPRISES JOINTLY ESTABLISH A MULTI-LEVEL PRACTICAL TEACHING SYSTEM

Based on the practice of the joint construction of "four years continuous line" curriculum system, to training and the training of basic skills and engineering practical ability as the goal, to build professional course in-class practice and experiment module, the relationship between the practice ability, to optimize the original verification experiments, comprehensive experiments and curriculum design to comprehensive practice, graduation practice class hours and contents of the practice, such as the content of each link gradually combined with enterprise project, set up campus practice base and off-campus practice base, through the actual combat training and strengthening the students' ability of engineering practice.

STRENGTHEN THE CONSTRUCTION OF TEACHING TEAM OF "DOUBLE TEACHER" AND "DOUBLE ABILITY" BY "GO OUT AND INTRODUCE"

In order to strengthen the training of students' practical ability, the college attaches great importance to the construction of "double teachers" and "double ability" teachers. A teacher training plan has been formulated, and a certain amount of funds will be invested every year in the construction and training of featured teachers. By means of school planning, college selection and enterprise assessment, young teachers are sent to the enterprise to exercise every year to enhance their understanding of engineering technology and improve their practical teaching ability. So that every teacher has a clear teaching, scientific research, engineering
and other characteristics of expertise. So that teachers can not only teach theoretical knowledge, but also guide the practice. Through practical projects, teachers can lead students to participate in scientific research projects and form a benign mechanism to promote teaching through scientific research. In addition, the college also hires engineers from cooperative enterprises to undertake teaching tasks in the practical link, so as to supplement the shortage of teachers in the school.

TEACHING QUALITY CONTROL SYSTEM AND MANAGEMENT SYSTEM CONSTRUCTION

We will further strengthen the monitoring of the teaching quality of engineering education and improve the teaching management system, which is dominated by schools and dominated by colleges, and involving departments and laboratories. Construction in line with the innovative applied talents training mode of teaching management system, such as professionals, part-time teachers teaching quality evaluation standard, professional direction development, diverse curriculum evaluation system, cognition practice, production practice, graduation practice tracing monitoring mechanism, graduates quality tracking system, etc., to provide a powerful guarantee to achieve professional construction goal. Strict teaching management. Build a professional teaching supervision system to increase the effectiveness of teaching management, to perfect the teaching supervision and evaluation system, to realize the standardization of the teaching quality monitoring and management, institutionalization, ensure the quality of teaching. At the same time, we will institutionalize and regularize social demand survey and graduate quality tracking survey, and promote the adjustment of professional structure and the optimization of talent training programs.

THE TEACHING EFFECT

The software engineering in our university has been oriented to new engineering application talents training patterns beginning in 2011, and has been implemented, feedback, summary and adjustment through several rounds of each link, and the cultivation model has been improved. The overall reflection of the students, the parents, the enterprises and the society, the quality of teaching has improved significantly, the student's abilities and the requirements of the corporation have been significantly improved, and the model of orientation of the new engineering has yielded remarkable results.

(1) The employment rate and employment level of students in the software industry have increased significantly.

The employment rate of graduates in well-known IT enterprises at home and abroad reached 58.3%.

(2) The support rate and job satisfaction of graduates increased.
The college conducts a comprehensive survey on the multi-party collaborative parenting model every year, and the approval rate of the graduates in the three sessions is more than 95%, and the employment satisfaction rate is over 98%.

(3) The employer's satisfaction with software engineering graduates has been rapidly improved.

The number of graduates in the field of software engineering is growing rapidly, and the satisfaction of enterprises to graduates is also increasing year by year, with the satisfaction rate reaching 93% in 2017.

CONCLUSIONS

This paper introduces the training system of software engineering professionals for new engineering. This training system takes the new engineering as the background and establishes the goal of "high-level, applied and international" personnel training. Guided by the needs of the industry and enterprises, the modular curriculum system and training system of "four integrations" are constructed. With the training goal as the criterion and education certification as the target, the multi-level practical teaching system of "four year continuous line" has been implemented. The construction of teaching quality monitoring system and management system has been built to improve the training quality of students' "professional knowledge, industry cognition, professional skills, professional quality". This training model has the promotion and application value to the college software engineering specialty training.

REFERENCES