Taking Students as the Center, Discussing Some Thoughts on the Certification of Engineering Education Major

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Abstract. This article from the audit evaluation and professional certification two aspects of engineering education professional certification conducted a series of studies. In accordance with the "five in one" evaluation system proposed by the state to improve professional quality, "students" "learning effectiveness" as the center to achieve the goal of personnel training, develop students' ability to learn for life, training students' positivist and logical thinking. It is an inevitable trend to innovate the model of school-enterprise cooperation and education, promote the combination of teaching and research, and make clear that the evaluation orientation of "taking output as the mainstay" is the construction of engineering education. Finally, deepen the development of higher education informatization through innovation.

Keywords: Students · Audit assessment · Professional certification
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At the end of September 2017, our college will usher in the entrance examination work certificated by the information security professional engineering education [1], which is also a new certification major after two consecutive passes of computer science and technology certification [2], and also the first batch of information security majors to be certified in the country. In the meantime, in October 2017, our school will also welcome the review and assessment organized by the Ministry of Education.

In order to improve the quality of teaching in higher education, our country has put forward a "five-in-one" evaluation system, namely "self-assessment", "college assessment", "professional certification and assessment", "international assessment" and "normal monitoring of the teaching basic state data". It should be said that audit evaluation is the inheritance and development of level evaluation [3], and it is a mode for college evaluation. Professional certification is a quality assurance action for the majors to meet the quality standards.

1 Efficient Response, Consistent Pace

The main evaluation criteria for undergraduate teaching review and assessment are what we commonly refer to as "five degrees": the coincidence of school run-

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ning orientation and social needs; the supportiveness for school running orientation produced by the four functions of colleges; the conformity of all aspects of personnel training; the guarantee degree of teaching resources to the training of talents; the satisfaction of students, society and government with the quality of personnel training. The top-level design of five degrees is "to answer what people to train", that is, personnel training objectives [4].

Engineering education accreditation should focus on seven aspects. That is, around the identified talents training objectives, we should evaluate ourselves in seven aspects: student development, training objectives, graduation requirements, continuous improvement, curriculum system [5], teaching staff and support conditions.

If we try to analyze the relationship between "five degrees" and "seven aspects": from the aspects of curriculum system, teaching staff and supportive conditions, we can review the guarantee degree of teaching resources to the training of talents; from the aspects of student development and graduation requirements, we can review the satisfaction of students, society and government with the quality of personnel training; from the aspect of continuous improvement, we can review the conformity of all aspects of personnel training; from the aspect of training objectives, we can review the coincidence of school running orientation and from the aspects of continuous improvement, teaching staff and support conditions, we can review the supportiveness for school running orientation produced by the four functions of colleges.

The "five degrees" of review and assessment directly affect the overall level of the school. The "seven aspects" of professional certification is the best starting point to sort out the running system, the "five degrees" and the "seven aspects" should be integrated with each other to ensure the quality of personnel training from different perspectives.

2 Take Advantage of the Situation, Grasp the Core

The PISA (Project of International Student Assessment) and the TIMMS (Comparative Programs of Mathematics and Science Achievements of the International Association for the Evaluation of Educational Achievement) conducted by the end of the 20th century have fully demonstrated that "output-oriented" evaluation orientation is the inevitable trend of engineering education major construction.

Combined with the general standard of engineering education accreditation, it is easy to see that there are three core concepts: the first is that the learning effect of students is the focus of attention; the second is that student learning results is orientation; the third is to promote the continuous improvement of teaching quality.

Based on the goal of school personnel training, we should form a professional training target to conform to the school orientation, adapt to the needs of the community and industry development, construct a scientific and reasonable curriculum system that supports the graduation target, rely on the leaders of

the grass-roots academic organizations and the course leaders, and continue to improve the teaching quality monitoring system.

3 Clear Concept, Enhance the Overall

To cultivate credible successors of socialism is the fundamental part of university education, cultivating the ability of lifelong learning and laying a solid foundation for the development of students. The personnel training in colleges and universities includes the four elements of literacy (humanistic heritage, healthy life, scientific spirit), knowledge (autonomous learning), innovation ability (practice innovation) and responsibility. In the 12 years from elementary education to higher education, students gradually gained the initial training of empirical thinking and logical thinking. However, how to flexibly apply the positive thinking and logical thinking, especially computational thinking, to solve complex engineering problems needs to be strengthened urgently.

For this reason, professional construction needs to pay attention to the following questions:

1. Innovate the mode of school-enterprise cooperation and education, and promote "the research on the mode of enterprise resource participating in personnel training". Delivery the enterprise needs of personnel to colleges and universities timely, bring high-quality corporate resources into all aspects of personnel training colleges and universities, which is a useful complement to personnel training environment.
2. Promote the combination of teaching and research, research is used in teaching, research in the process of teaching. In his autobiography "How to Get the Nobel Prize", Michael Bishop, winner of the 1989 Nobel Prize in Physiology or Medicine, said: "It is boring to engage in academic research but not to teach, and modern scholars engaged in scientific research and teaching, their lofty mission is to combine scientific discovery with teaching in the same individual."
3. New technologies and new knowledge are disseminated, promoting new technologies such as cloud computing, big data and artificial intelligence, the concept of educating people driven by "innovation-driven and talent-oriented" is constantly deepened.
4. In the post-industrial era, we should promote the reform of the way of running a school through education informatization and deepen the informatization development of higher education.

4 Close Four Rings, Focus on Quality

It has always been concerned with the two assumptions of teaching: "Everything that runs counter to the law of human development will fail." "All teaching reforms that are free of students will fail".

Therefore, we must grasp the "fixed point" of continuous improvement of teaching quality. From the supporting degree of the teaching process to the curriculum objectives and the graduation requirements index point, the course carries on the comprehensive examination; According to the reasonable evaluation of the course, the degree of graduation requirement is calculated; To examine the training target, the achievement degree of the training goal is calculated; Through the feedback of the social and employing units, alumni, teachers and students, the school orientation and professional characteristics are combined, continuously improving the training goals.

5 Conclusion

With the opportunity of evaluation and professional certification, the college has put forward the teaching principle of "quality first, carry out power and responsibility, pay attention to the core", reached four major development strategies that include "cultivating all kinds of computer major, certifying all professional projects and integrating the curriculum system with international standards", and put forward four programs to enhance the program content which are constructing course context with the ability to solve complex engineering-based problem; proposing training strategy new ideas for curriculum integration and promoting the integration of school-enterprise innovation; promoting the clarity of curriculum orientation and the implementation of grassroots academic teaching responsibility; Carrying out the Trinity of certification, appraisal, and professional construction. Finally, These strategies form four validating ways:

1. Emphasize the output guidance, content updating and simultaneous reform of teaching methods and assessment methods;
2. Multi-source course quality assurance system centering on "students" "learning outcomes";
3. Comment and construction synchronizes, choose excellent teachers, and build a comprehensive teaching environment.
4. Audit evaluation and professional certification, as an important starting point for personnel training, is "one of the two wings, dual-wheel of the drive" of the education development.

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