Cultivation of Engineering Practice Ability of Young Teachers in Colleges and Universities in the Period of Emerging Engineering Education

Fengjuan Wang[a], Shufeng Jiang[b], and Youzheng Cui[c]

Institute of Mechanical and Electrical Engineering, Qiqihar University, china, 161001

[a.]657678158@qq.com; [b.]474118867@qq.com; [c.]634123048@qq.com

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Abstract: In the current era when the concept of Emerging Engineering Education is prevailing, the reform of engineering education in colleges and universities is not only aimed at the training mode of students, but also at the reform of teachers 'ability. In order to train graduates who meet the needs of the times, colleges and universities must strengthen the training of young teachers 'engineering practice ability. Based on the necessity of developing the practical ability of the young teachers in colleges and universities, this paper analyzes the present situation of the development of the practical ability of the young teachers in colleges and universities under the circumstances of Emerging Engineering Education construction. The evaluation and incentive mechanism of young teachers after the reform of the engineering ability training model was established, and the evaluation mechanism of professional title was further improved. The results of this study can be used to guide teachers from the traditional industry to the new economic industry field. It is an effective measure to improve the engineering practice ability of young teachers in colleges and universities.

1. Introduction

In recent years, the lack of engineering practice ability of engineering students is the focus of undergraduate training, and the main reason of this problem and the lack of engineering practice ability of young teachers has an important relationship. Starting from the academic characteristics of engineering specialty, and from the demand of engineering graduates in today's society, it is necessary to raise the issue of the training of engineering practice ability of young teachers in engineering specialty colleges and universities. Young teachers in colleges and universities with weak engineering practice ability, the practical ability of the graduates trained, especially the practical ability of engineering, will also be correspondingly weak. It will be difficult for colleges and universities to cultivate innovative talents in Emerging Engineering Education science and technology that meet the needs of society[1]. Therefore, this paper focuses on improving the engineering practice ability of young teachers in engineering specialty, and puts forward corresponding effective measures.

2. Awareness Emerging Engineering Education Section

The concept of Emerging Engineering Education was proposed in 2016. At that time, the Ministry of Education and many colleges and universities conducted in-depth research on the reform of engineering education. Since then, the concepts of "Fudan Consensus" and "Great Action" have been active in the eyes of intellectuals[2]. The Emerging Engineering Education department starts from the overall situation. It puts forward new thinking and new way for the stable development of higher education in China. In April 2017, the Ministry of Education issued the "Action Line for the Construction of a Emerging Engineering Education Section." Since then, the goals and contents of the construction of a Emerging Engineering Education section have been clearly defined.

Colleges and universities are the bases for training talents in Emerging Engineering Education.

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Because colleges and universities must not only control the development prospects of emerging engineering professional construction, but also make arrangements for training talents who will lead the future development of technology and industry, and they must also innovate the training programs and training models of existing engineering majors. To prepare for accelerating the transformation and upgrading of traditional engineering majors[3] .

At present, most young teachers in colleges and universities are still academic talents trained by the traditional postgraduate training model, and they can’t fully meet the requirements of the Emerging Engineering Education department for university teachers. Therefore, the urgent problem to be solved at present is that in order to meet the needs and mission of Emerging Engineering Education construction, to strengthen the training of young teachers 'ability and the construction of teachers' teams, it is a pressing problem faced by major institutions of higher learning and engineering majors.

3. The Necessity of Training the Engineering Practice Ability of Young Teachers in the Emerging Engineering Education Field

3.1 The Requirements of the Rapidly Developing Society for Graduates of Engineering Majors.

Under the guidance of the Emerging Engineering Education concept, for graduates of engineering majors, professional basic knowledge and application skills are essential basic conditions. In addition, It also requires the ability to engage in design and manufacturing, scientific and technological development, and applied research in related fields in the industrial production line. The purpose of cultivating talents in institutions of higher learning is to serve the society, and what the society needs is applied talents. It requires students not only to have theoretical knowledge but also to have strong practical ability.

At present, the training of undergraduates in colleges and universities requires practice teaching time of not less than one year. Its purpose is to cultivate students 'ability to combine theoretical knowledge with practical application. This necessarily requires that the college teachers' engineering practice ability be improved.

In addition, the expansion of professional master's degree in China puts forward a higher demand on the engineering practice ability of university teachers.

3.2 The Training of Traditional Engineering Education Model Makes the Young Teacher's Practice Ability Lack.

In addition to the basic requirements of traditional teacher ethics,professional conduct, professional knowledge, and theoretical level, the construction of Emerging Engineering Education courses for teachers has also proposed to college teachers: Under the new economic development model, To master the prospects for professional development in emerging industries and related advanced technologies, we can effectively grasp the theoretical direction of the majors we study and the alignment point of the new economic development. We need mature engineering practice experience and ability, and have excellent teaching and education capabilities that match the reform of engineering education. Can carry out the innovation of new concept teaching strategy and new technology teaching method[4] .College teachers receive the training of the traditional engineering education model during their studies. This model emphasizes theory and light practice. After graduating from college, young teachers directly enter the university to work. They have never left the school gate and lack the middle engineering practice. However, as the main body of colleges and universities to train students, teachers are the backbone of the development of higher education reform. The lack of practical ability of this group of engineering will inevitably cause irreparable losses to the talents needed by the society.

3.3 The Return of Engineering Practice Ability of Emerging Engineering Education Section Calling Young Engineering Teachers.

Nowadays, there are some problems that need to be solved urgently in the mode of training talents

in colleges and universities. The undergraduate curriculum design has the phenomenon of “learning”light “technique”; Students lack the ability to apply the knowledge they have learned and the results of scientific research during school to practical engineering. The Emerging Engineering Education construction proposed by the state is a challenge to higher education in China, and the revision of the new type of personnel training program should focus on the training of engineering ability and take the training of engineering science and technology personnel as its purpose, that is, to cultivate students face to big project concept. The integrity of the project is used to organize courses, establish links between courses, and change the previous model that emphasizes theory over practice; On the other hand, the training of practical students can’t be separated from the teaching of teachers. Teachers with engineering consciousness and engineering ability are the real imitators of the new type of engineering personnel training[5].

4. Present Situation of Engineering Practice Ability of Young Engineering Teachers

Young teachers are the main force in the teaching team, and the construction of Emerging Engineering Education in colleges and universities can’t be separated from their participation and implementation. At present, most of the young teachers in colleges and universities leave the school gate and enter the school gate to participate in the work. There is a big gap between the requirements of the construction of Emerging Engineering Education. This paper will briefly introduce the existing problems and current situation analysis from the following two aspects:

4.1 Young Teachers Lack Practical Experience in the Field of Engineering in New Industries.

At present, the education model of colleges, universities, universities, and universities has the characteristics of "focusing on theory and light on practice". While paying attention to academics, it ignores the cultivation of students 'engineering practice ability. Therefore, college teachers trained under this model, Naturally, it ignores the accumulation of experience and ability in engineering practice.

In addition, the vision of college students is limited by the field of research of their mentors. Therefore, it is not surprising that young teachers trained under this model lack engineering practice experience. There are even fewer research learners involved in new industries.

4.2 The lack of necessary Incentive Mechanism for Young Teachers to Improve Their Practical Ability and Exercise.

At present, colleges and universities attach importance to academic achievements when evaluating and evaluating their professional titles, and favor high-level dissertation achievements and scientific research projects. However, participating in enterprise cooperative research and development work, there are many difficulties in research, such as small return on early investment, long research cycle, and heavy energy. If there is no corresponding incentive mechanism for colleges and universities to evaluate and evaluate their professional titles, many young teachers will not be enthusiastic enough to devote themselves to the research of engineering practice projects[6].

5. Ways and Measures to Improve the Engineering Practice Ability of Young Engineering Teachers

The key to the success of the Emerging Engineering Education construction lies in talents. For colleges and universities, what is needed is a team of teachers who meet the needs of the new economy and meet the requirements of the Emerging Engineering Education. Therefore, the training of young teachers in colleges and universities should focus on the purpose of facing Emerging Engineering Education construction, follow the action line of Emerging Engineering Education construction, and meet the challenges of Emerging Engineering Education construction and new economic transformation.

5.1 Focus on Training Young Teachers' Engineering Practice Ability in the New Economic Industry.

The Emerging Engineering Education department proposed by the Ministry of Education aims at facing the industry and needs colleges and universities to establish new specialties and build new training structures according to the situation. In the era of industry 4.0, the prospects for the development of emerging industries such as artificial intelligence and intelligent manufacturing are bright, and more talents are needed to invest in industrial development and construction. The reality is that the original research fields of many young teachers no longer meet the needs of the development of modern enterprises, and the talent structure and social needs do not correspond[7].

Based on this phenomenon, colleges and universities should pay attention to guiding the research trend of young teachers, combine with the existing research foundation, consider the needs of Emerging Engineering Education construction, and change the direction of future research. In response to the call of Emerging Engineering Education construction, we will promote cross-integration of disciplines and form a new direction of cross-disciplines.

5.2 Reforming the Evaluation and Incentive Mechanism, Improving the Title Evaluation Mechanism, and Strengthening the Internal Motivation of Young Teachers to Build New Engineering.

On the one hand, in the evaluation of professional titles and various evaluation, colleges and universities should add engineering practice ability factors as the basis for evaluation; On the other hand, young teachers should have an appropriate protection system for the construction of Emerging Engineering Education departments, because young teachers face a small return on early investment, a long research cycle, a large amount of energy, and no outstanding results in the practice of new industries. Only when universities consider these existing problems can young teachers invest in Emerging Engineering Education construction without any worries.

5.3 Actively Creating a New Engineering Construction Atmosphere and Creating Conditions for Young Teachers To Join New Engineering.

Under the background of key support from the national, provincial, and municipal levels, local colleges and universities should combine their own ideas and characteristics of running schools to bring into play grassroots initiative, unite emerging industries, and integrate enterprise forces into the construction of Emerging Engineering Education departments.

To provide conditions for young teachers to join the new ecology of engineering education, to cultivate young teachers with a Emerging Engineering Education vision, to have strong engineering practice experience, to be able to effectively integrate the theoretical knowledge learned and factory practice, and to lay a solid foundation. The young teachers trained in this atmosphere will certainly become a new type of teachers with international vision, engineering practice ability and high academic level.

6. Conclusion

For young teachers, the construction of Emerging Engineering Education is not only a huge challenge, but also a unique opportunity. As an important part of the teaching staff of colleges and universities, the role of young teachers in innovation and entrepreneurship education is irreplaceable. The practical ability of young teachers in colleges and universities not only affects the development of innovation and entrepreneurship education, but also affects the training of practical talents. Young teachers shall, according to their own characteristics, take the initiative to adapt to the new economic development and actively participate in the construction of Emerging Engineering Education subjects, in order to create a team of young university teachers who are professional, forward-looking and innovative in their practical abilities.

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References

[1] Hui Xiao-li, JI Li, XU Peng.On Improving Young Professional Staff's Engineering Practical Abilities among Chinese Higher Education Institutions[J]. Educational science, 2010, 26(06): pp65-68.

[2] Luo zhong-tao,ZHANG Gang.A Probe into the Training of Young Teachers Facing the Construction of Emerging Engineering Education[J]. Modern economic information, 2017(13):pp406+408.

[3] Du Ya-li.Cultivation of Engineering Practice Ability of Young Teachers in Applied Subjects[J].Teaching and education (Higher education forum), 2017(33):pp68-70.

[4] ZhaoPeng-Fei.Research on the Training Mechanism of Young "Double Teacher" Teacher Training[J]. China training, 2018(09):pp14-15.

[5] Di Xin.How to Improve the Teaching Level and Teaching Ability of Young Teachers in Colleges and Universities[J].Think Tank Era,2018(28):pp253-254.

[6] Zhang Fu-ming,LI Hong-Qi,Shao Cai-Rui.Talking about the "Teacher's Education" of Young Teachers in Higher Engineering Colleges[J]. Petroleum Education,2001(01):pp66-67.

[7] Qian Jingzhu,Guan Guofeng,Cheng Bensong.Analysis of the Present Situation of Young Teachers' Teaching Ability and Research on Promotion Strategy in Higher Engineering Colleges[J].Experimental Technology and Management ,2014,31(09):pp183-186.