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Teaching Direction of Higher Vocational Major of Petroleum Engineering

WANG Changjin[a],*; LI Yinpeng[a]; HA Mingda[a]; LI Lei[a]

[a]Northeast Petroleum University at Qinhuangdao, Qinhuangdao, China
*Corresponding author.

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Abstract

Higher vocational major of petroleum engineering are a comprehensive major cultivating personnel with oil & gas development and operation skills and professional theoretical knowledge oriented to petroleum engineering industry. With development of science and technology, petroleum engineering technology and equipment have become increasingly modernized, and the previous working method relying on experience and physical strength is not suitable for modernizing oil & gas survey and development any more. The rapid economic and social development and the information feedback of oil companies' demand for talents have made the teaching philosophy, curriculum, and teaching methods change with the market demands, and students' education and their ability acquired in study become closer to the actual demand. The direction of reforming higher vocational major of petroleum engineering is to cultivate the students to be the new youth of ambition and professional technology, who endures hardships and is willing to learn. In this paper, teaching direction aming at cultivating students of higher vocational major of petroleum engineering was discussed.

Key words: Higher vocational; Petroleum engineering; Practical training; Teaching direction; Discuss

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INTRODUCTION

Energy has always been one of the main subjects of world development (Peng, 2002). The target of higher vocational major of petroleum engineering is to cultivate higher-level applied talent suitable for development of petroleum engineering, who masters necessary professional basic theories and specialized technology and be capable of work at the forefront of production with practical operation skills. However, in recent years, the undoubted fact is that it is difficult for college student to find a job. Petroleum college has high reliance on petroleum industry, and employment of high vocational students of petroleum college is facing difficulty at present. Under this background, it becomes especially important to study the reason of job hunting difficulty of higher vocational students of petroleum college and the measures to be taken (Quan, Zhao, & Zhang, 2003). Same to theoretical teaching, practical training is an important step in linking higher vocational major of petroleum engineering to the actual production. Teaching shall be concentrated on using characteristics of youth students and fully displaying advantages of college teaching to cultivate promising talents who are capable of work and willing to stay long time for enterprises (Han, Cui, & Jia, 2007). The rapid economic and social development and the information feedback of oil companies' demand for talents have made the teaching philosophy, curriculum, and teaching methods change with the market demands, and students' education and their ability acquired in study become closer to the actual demand, which to some extent enhances students' ability of adapting to future social development and work. On the basis of teaching basic concepts and theories, oil vocational colleges generally add some practical courses, especially the extension of internship, so that students can quickly adapt to the work requirements and meet the needs of employers once they start to work (Wang, 2005). At presents, many high vocational colleges are facing difficulties of teaching, for example, shortage of fund

and faculties, and lack of training and sense of innovation. Only correct teaching direction of higher vocational major of petroleum engineering will meet the industry's requirement of talents. It will not only make contribution to economical construction, but also bring vigor and vitality to the development of colleges. In this paper, from the view of cultivating talents needed by the industry, teaching directions will be discussed for providing reference for higher vocational major of petroleum engineering.

1. BASED ON PETROLEUM INDUSTRY, CULTIVATING APPLIED TECHNICAL TALENTS

The oil industry has an increasing demand for the quality of talents, and especially the high-tech practical talents are urgently needed in the work site. The vocational education of petroleum has very clear goal and direction, namely, cultivating highly qualified and skilled professionals for enterprises. With the deepening restructuring and reform of oil enterprises, the employment mechanism has changed a lot. But the supply and demand relationship between businesses and schools has not fundamentally changed. Particularly, the distinctive characteristics of oil enterprises further determine that oil enterprises depend on the skilled talents from petroleum vocational colleges urgently. Thus, petroleum vocational colleges should be closer to the front line and better serve oil enterprises. Higher vocational students study in college for a short period of time, generally about 2 or 3 years (Dong, 2009). There is a reciprocal relationship between time spent on theoretical teaching and practical training, the former one to teach students necessary specialized basic theories and professional knowledge and the latter one to cultivate operation skills of students. Both kinds of teaching are necessary for students to participate actual work. The study of basic theories is weakened. Although students can have a strong adaptive capacity in a short time, with the passage of time and increase of work requirements, students will lack of the momentum for future progress obviously. From the perspective of economic and social development, it to some extent will reduce the quality of social workforce, and the adaptive capacity will be limited. In general, students' education background and basic theoretical level are positively correlated to future development potential and their adaptation to the professional work. At the outset, when dealing with simple work, students with different education background will not differentiate themselves from others in terms of working ability. However, with the increasing work intensity and difficulty, and increasing requirements for personal overall quality, there will be more and more obvious difference between students with different education background as well as different majors. Selection and time distribution of practical training courses is extremely important, the development trend of higher vocational college is to increase the ratio of practical training. Presently, there is personnel shortage for petroleum industry; however, on the contrary, job hunting of graduate students of petroleum college is difficult. One of the main reasons resulting in the conflict is that students cultivated by colleges are not the type of personnel needed by the industry, who needs promising talents who are capable of work and willing to stay long time for enterprises. From this point, it could be found that practical training of higher vocational major of petroleum engineering shall be based on petroleum industry and concentrated on vocational capability. Through reform of practical training, i.e. reduce demonstrative and verifying experiments and increase process, design and comprehensive experiments, gradually establish a relatively independent practical training system organically combined by basic practical training ability and operation skills, professional technology applied ability and professional skills, comprehensive practical ability and comprehensive skills. Practical training system of higher vocational education shall be based on analysis of learned knowledge, vocational ability and quality structure. The training shall be an organic integrated system progressed by layers and applied by stages from basic skills, professional skills and professional applied ability, of which the purpose is to effectively cultivate students' technology applied ability, innovation ability and ability of analyzing and solving problems.

2. INSISTING SPIRIT CONSTRUCTION, BUILDING UP THE VOCATIONAL BELIEF OF ENDURING TOUGHNESS

Petroleum engineering industry is a tough industry, especially the higher vocational graduates generally work at the forefront with harsh and risky environment. The result is that on one hand, job hunting graduates from higher vocational petroleum college are increasing significantly; on the other hand, there is serious shortage of talents for many grassroots area and enterprises. Some remote areas are increasingly thirst for college students, especially applied talents of higher skills to build up achievements (R. L. Liu, Liu, & Zhao, 2008). The unbalance not only brings great pressure for development of the industry, but also hinders development of the college students. To solve the structural problems of supply and demand of talents, it is becoming more important and urgent to encourage higher vocational graduates to work at grassroots enterprises. Therefore, college education shall guide students to build up a correct value and cultivate their work style of enduring toughness. At present, no study has been carried out on the teaching system of cultivating higher vocational students' vocational belief to work at the grassroots. Some studies were targeted on certain aspects, and teaching system has not been formed. Vocational belief means recognition or view accepted and confirmed by the individual who

is willing to take the recognition or view as his guide. Vocational recognition changes often; however, vocational belief will hardly change once formed. Whatever the vocational orientation is, after entering into the industry, people will insist on his belief move on, no matter what difficulty confronted. An industry can never develop without specialized talents' vocational belief of serving it. While cultivating vocational belief of students, it mainly depends on their view on employment trend, employment intention, employment purpose and professional attitude. To positively encourage higher vocational students to work at grassroots, related governmental departments and higher vocational colleges shall support and care from multiple aspects and levels, establish full security system, strengthen awareness of service, innovate styles of service and provide service and guidance for higher vocational graduates with targeted measures. Features of petroleum industry shall be embodied in college teaching setting to convey petroleum spirit to students and cultivate positive energy. Therefore, it's a conscious choice for graduates to establish a new idea of "finding a job first and then choosing a career; surviving first and then developing" and work at the front-line of petroleum engineering (Wang, Meng, & Xu, (2012). It's necessary to conduct education of grass-roots awareness, hold the main line of cultivating talents with the characteristics of "rooting in the grass-roots level, dedicating to the grassroots, and achieving self-worth", adhere to put priority to people, and cultivate outstanding talents that can "work in the field, do well and stay willingly". It's necessary to rely on the mature moral system to take use of ideological and political education and career guidance course to help students understand the petroleum industry, strengthen their concepts of practice, obedience and labor, and enhance their dedication spirit. It's necessary to make students understand the meaning of employment fully and systematically, help them analyze the pros and cons of employment, help them avoid misunderstanding grass-roots employment and develop the thoughts of working at the frontline and serving the grassroots.

3. CULTIVATING KNOWLEDGE-PURSUING TALENTS

Knowledge-pursuing means making learning a kind of living way, i.e. learning in the whole life. In a knowledge-based economy society, knowledge explosion significantly accelerates aging of knowledge. With this background, living and development will be difficult without timely study and grasping the latest knowledge and skillfully materializing new knowledge to new product or service needed by people.

Literature (Sun & Liang, 2014) conducted a survey on graduates' learning ability. 25.53% graduates plan to further study while working and have made a detailed plan. 46.80% graduates make such a plan but haven't taken any actions. 23.41% graduates don't intend to study while working in the short term, and 4.26% have never thought about this. Among the graduates who have recognized the gap and make a detailed plan in this survey, some still do not find scientific or suitable learning methods and approaches. A number of them admit that they have difficulties in improving themselves because of lack of suitable learning methods.

Professional knowledge and technology of petroleum engineering are improving dramatically, and petroleum higher vocational college shall cultivate students' learning awareness rather than certain skill. In the setting of practical training, students shall be encouraged to participate positively and feel the happiness of learning during continuous advanced study. Passive learning shall be changed to willing to learn, until positive learning. Only constant learning with progressive spirit could complete and improve knowledge structure (Wang & Jia, 2011). Knowledge-pursuing talents shall be firstly explicit his own learning target. Through teaching setting, students are taught to determine learning target. Through improving hard and soft facilities and establishing a good learning environment, students are encouraged to establish good learning habit. Student' learning interest can be inspired through skill competition and knowledge contest. Outstanding field workers can be invited to teach learning experience, making students aware of the importance of learning. Outstanding students will be rewarded and recommended to employers, making students know benefit of learning. Through years of teaching like this, students' learning interest can be inspired from the beginning.

4. CULTIVATING TEAM SPIRIT

Team work means the progress of a group of people of ability and faith to work and cooperate with each other to realise common target. It can mobilize all resource and wisdom of team members and automatically drive away unfairness and disharmony. Meanwhile, those single-hearted and unbiased contributors will be suitably paid back. Voluntary team work will generate strong and enduring power.

As the "post 90" generations are arrogant and self conceited, these students can not get along well with others after graduation. According to the survey (Sun & Liang, 2014), 74.16% think that they can get well along with others, but 11% feel that it is difficult to get along with others. During the interview, 90% believe that good coordination capability can greatly enhance their work efficiency and performance.

Petroleum engineering is a competitive industry relied on cooperation. Therefore, a talent suitable for petroleum industry must be a cooperative talent. It is required that in vocational education, students are taught not only abundant

knowledge, but also good team spirit and ability to properly deal with interpersonal relation, which specifically are broad mind and not haggling on personal interest; ability of coordinating relation and solving conflicts; team spirit of working hand in hand with concerted effort. Only with team spirit, people can confront severe challenge, win opportunities and continuously innovate and move on. In practical training, some team work courses can be set, in which students are required to finish one task jointly in different roles and scenes. Students will feel the significance of cooperation and learn methods to be taken. Their team spirit will be further cultivated.

5. CULTIVATING SAFETY AWARENESS

Petroleum engineering is featured by coexistence of opportunity and risk. Any mistake in work would possibly lead to unrecoverable damage. During oil & gas surveying and development, there is great risk. Once major accident occurs, it will lead to injury and death of personnel, damage of drilling equipment and environmental pollution, of which the loss and impact are immeasurable. Therefore, risk of drilling work shall be reduced, and accidents during petroleum development, especially major malignant accident, shall be avoided. In college education, to solve the contradiction of emphasizing only theoretically not practically, it's necessary to seize both theoretical and practical teaching, give full play to the advantages of teachers' instruction, enhance the education on students' awareness of petroleum engineering safety, elaborate the engineering accident cases caused by weak safety consciousness in accordance with facts, and conduct safety awareness education accordingly and pointedly. It's necessary to make use of classroom and practice teaching. Teachers can combine the curriculum to conduct safety awareness education appropriately, and explain some accidents caused by lack of safety awareness at home and abroad. Finally, it's also necessary to guide students' safety awareness and cultivate their habits to put priority on the safety awareness during class and field internship. According to environment investigation result of the petroleum development area, links of work where accidents are easy to occur and routine management, students shall be taught to recognize risks and analyze dangerous factors from human activities, substance status and environmental factors etc.. For example, during drilling, overflow of hydrocarbon from soil stratum will cause blowout. While analyzing the case, try to find out the reason from the view of human behaviors, equipment error and conditions of soil stratum etc..

CONCLUSION

Petroleum engineering is an industry where opportunity and risk coexist. With development of science and technology, petroleum engineering technology and equipment have become increasingly modernized, and the previous working method relied on experience and physical strength is not suitable for modernizing oil & gas survey and development any more. The direction of reforming higher vocational major of petroleum engineering is to cultivate the students to be new youth of ambition and professional technology, who endures hardships and is willing to learn. it's a conscious choice for graduates to establish a new idea of "finding a job first and then choosing a career; surviving first and then developing" and work at the frontline of petroleum engineering. Same to theoretical teaching, practical training is an important step in linking higher vocational major of petroleum engineering to actual production. Teaching shall be concentrated on using characteristics of youth students and fully displaying advantages of college teaching to cultivate promising talents who are capable of work and willing to stay long time for enterprises. Only correct teaching direction of higher vocational major of petroleum engineering will meet the industry's requirement of talents. It will not only make contribution to economic construction, but also bring vigor and vitality to the development of colleges.

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