Improving Petroleum Continuing Engineering Education

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Abstract *- This paper presents the importance of interaction between petroleum engineering schools and the oil industry and how both can be played together towards effective continuous engineering education of engineers. It recommends to have a joint committee from the industry and academia to define the plan and execution of such plan. It also discusses the interest of each party and how they could cast to their joint benefit.*

Index Terms *- Petroleum, Engineering, Continuous Education.*

INTRODUCTION

"petroleum engineers made the world run". This proud quote, extracted from a Petroleum Engineering Society's website indicates how highly we regard our carrer and at the same time, indicated how important it should be the educational process that prepares the next generation of engineering to fulfill the industry needs[1]. Continuing Educating programs is a tool that is not well utilized by working professional. Probably one of the reasons for that, is the fact that programs offered by petroleum engineering schools fragmented, not always attending specific professional needs and most of the times, not efficiently publicized [2]. However, this could be one of the most efficient ways to proficiently promote communication between Industry and Academia.

The international debate on continuous engineering education (C.E.E) has been ranging for several years. It is becoming increasingly recognized that professional engineers need to under take continuing education beyond graduation to maintain their competencies within a rapidly developing technological environment. Recently, as illustrated in discussion during the SPE sixth colloquium on petroleum education [2], continuing education is a prominent issue currently on the minds of educators and employers.

There has been a lot of talk about continuing education of engineers beyond college. However, there is very little planning and execution in this important field. With this in mind and also with the increasing globalization, this paper treats some of the role that can be play both by the universities and the industry in shaping continuous engineering education.

WHAT NEEDS TO BE DONE TO IMPROVE THE SITUATION

Forming a joint committee from industry and the academia

In order to have good planning for a successful policy in Continuous Engineering Education Field, there has to be a joint committee from the industry and academia to define the plan and the execution of such plan[3]. Such committees must be from knowledgeable persons in the industry and academia at every level.

These committees should have the authority to implement the planned policy. Planning a policy is something, which may or may not be put to enforcement. Thus having the authority to implement the decisions is an important matter for success or failure. This does not mean that democratic means of persuasion should be abandoned. To the contrary, they are necessary for success, but after exhausting all democratic means of convincing the parties, the enforcement of the , decisions is need.

PROTECTING THE BENEFIT OF UNIVERSITY AND INDUSTRY

There is a great potential for mutual benefits from university- industry interactions. However, it is important to keep in mind that we are dealing with two different worlds, the life in an industrial enterprise and in academia. The products and services and the external conditions for their delivery are different; and so are the reword system, the way in which funds are generated, and rules for appointment of personnel and allocation of resources.

The benefit of the university

In recent years the funding for education from traditional government sources has decreased and most universities have fallen on hard time economically. Therefore, they are more interested in maintain the financial life line before anything else. Maintaining academics education quality and ensuring an adequate supply of well trained professional is an important goal, but what good is it for the university if it is in a hard financial position? Therefore such interest aught to be observed in any future planning for continuous engineering education policy.

Several main reasons for universities to seek cooperation with industry one claimed to motive the university to increase university-industry cooperation. They have identified several reasons for this interaction:

(1) Industry provides a new source of money for university, (2) Industrial money involves less "red tape" than government money, (3) Industrially sponsored research provides student with expanse to real world research problems, (4) Industrially sponsored research provides university researches a chance to work on an intellectually challenging research programs, (5) Some government funds are available for applied research, based upon a joint effort between university and industry [4].

The benefit of the industry

Industry is looking for well- rounded individuals with skills and attitudes which enable them to fit quickly and smoothly into workforce. Thus, Industry has a vital interest in engineering education since the quality of graduates is of critical importance to the success of its endeavours.

This shows the interest of the parties, which must be taken in consideration during the planning. Thus making money available, through financially capable corporations should be coupled with the condition of improving the education at the universities including charges to traditional formal of degrees, courses, research and attitude to meet industry need.

Several main reasons, which are claimed to motivate the industry to increase university-industry cooperation, have been provided.

They are: (1) access to manpower, including well-trained graduates and knowledgeable faculty, (2) access to basic and applied research results from which new products and processes will evolve, (3) solutions to specific problem or professional expertise, not usually found in an individual firm, (4) access to university facilities, not available in the company, (5) assistance in continuing education and training [4,5]

HOW TO IMPROVE THE QUALITY OF THE PRACTICING ENGINEERS

Courses Tailored for practicing Engineers

Because practicing engineers cannot attend classes at any time given by the universities, therefore educational courses for practicing engineers should be given in a time that makes it easy for them to attend. Not only the time need to be altered, but if there are many engineers in a specific corporation, interested in continuous engineering education, then may be such classes should be given at the premise of the corporation to make it easier for the engineers to attend the classes. Furthermore since such continuous engineering education serves the interest of the corporation accordingly it may necessitate giving such practicing engineers time off to attend such classes.

The contents of such courses should consider the level of knowledge and practical experience gained by the practicing engineers during their practice of the profession. Instead of giving them abstract theory, they should be given applied theory and how to use it in a simplified method to solve their daily engineering problems.

Those who teach the courses to the practicing engineers should have considerable practical experience to match and exceed the experience of the engineers who are taking such courses.

Crediting the Experience Towards Higher Degree

As an incentive to the practicing engineers to improve their education and update it to the latest development in theory, they should be given as incentive towards taking such courses, so if they feel that their experience is counted towards higher degree they will be more willing to take such courses. These courses could be including on-compus programs, off-compus web and internet-base education.

DISCUSSION AND CONCLUSIONS

We have presented the role of university -industry cooperation in continuous engineering education as useful mean in shaping the working engineering and offering potential's benefits to both parties. Such venues are outlined in the above points. Such improvement, not only, can return a good dividend the Industry in return for the funds allocated for such projects by the industry, but also brings a new perspective to academia and industry's influence increases faculty knowledge of industrial applications and prepares engineering graduates for industrial applications and prepares engineering graduates for success in the workplace.

In all these improvement, the role of industry is crucial. If indeed, industry wants professional engineers who can function effectively in a continuous education, it must accept a significantly increased responsibility to commit financial (and human resources) to education of such engineers.

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