

Perceptions and Attitudes of Student on Soft Skills in Petroleum Engineering

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Abstract - This study presents results of soft skills and competences sought in today's engineering graduates that would be required for a successful engineering professional by examining the perceptions presented by young engineer for a petroleum engineering education environment. The result provides some valuable insights into the relative importance of various type of essential soft skills. The results indicate that students prefer to have not only possess technical competencies but also the non-technical skills. The majority of young engineers identified a list of important skills which fall those identified as count for the next generation engineers.

Index Terms - communication skills, hard skills, petroleum engineering, soft skills

INTRODUCTION

It is expected that engineering graduates to be employable and ready for the work place they complete their studies. It is generally expected that besides the solid theoretical knowledge (hard skills) included in the basic sciences and engineering sciences, a good engineer should acquire additional relevant non-technical or soft skills. This balance is what gives one graduate competitive edge over another [1-2].

A literature survey on soft skills reveals that there is no singular definition of the set of skills. Some refer to them as “process skills” [3], generic skills [4] and transferable (or personal) skills [5]. Despite the fact that varying terms are used to define soft skills, these seems to be general common descriptions of what these skills include for example, communication skills, life-long learning, team work, creative thinking skills and so on.

For many Iranian engineering students, it is important to adequate soft skills, particularly communication skills (in English) since the international language of petroleum Industry is English [6], in addition to technical skills. This presents a challenge for engineering education, not only to develop life-long learners, but also to bridge the perceived gap between the change engineering practices and employer expectations and the engineering curriculum.

This paper aims to shed light on the importance of soft skills as perceived by petroleum engineering students on the role and values of these skills in educating the future engineers, in an attempt to understand what value they attribute to this traditionally downplayed set of skills.

WORK METHODOLOGY

The objective of this work was to provide responses from student on the important of soft skills in petroleum engineering in order to gain some insight into their views on this important matter.

The data collection was based on a questionnaire containing some questions. The questionnaire was presented in a user-friendly multiple-choice format, with a few open-ended questions, to reduce the effort of answering. The questionnaire was administered to the young engineers at a Iranian petroleum university. 50 students responded to the questionnaire.

RESULTS AND DISCUSSION

The importance of soft skills

The results revealed significant gaps between what university offer and that students demand.

The majority of the students were positive about the relevance and importance of soft skills. A large number (40) of students demonstrated this positive view by agreeing with the following statement: “Soft” skills are equally important to “Hard” skills in petroleum Engineering. The reasons given for this choice are interesting. The responses show that students have an understanding of the inter-relatedness of the two sets of skills and refer to them as coexisting and being dependent on each other. These responses suggest a more contemporary view of the relationship between the traditionally preferred hard

skills and the lesser preferred soft skills.

The students mention the importance of being team player and being able to market themselves and their ideas. This seems to concur with the notion that successful engineers must be team players, be able to work with others and communicate ideas, in so doing adding value to their performance [7].

The remaining responses were in agreement with the statement that soft skills are less important than hard skills. These responses echo a traditional view that the one set of skills is more important the other and that they are not dependent on each other. Students might not be averse to the idea of soft skills and admit that that these are important, but are superseded by the hard skills. One student wrote; “soft skills are very important and make you a better engineer, but hard skills are the basics you need to be an engineer.”

Rather than be a better engineer, the student is content, with being just an engineer but having the basics.

Degree of work preparedness and skills upon graduation

The majority of the students responded negatively when answering a question on how prepared. They think they will be for the workplace and whether they will have all the necessary skills when they graduate. They attribute this to fact that the university and industry are different in many ways. What is expected at the university is not always what is expected in the workplace. Thus, there is gap between what is learned in college and what is required in the workplace[5].

Other responses point to the lack of adequate in-service training where there are no opportunities to apply what has been learned at the university. Furthermore, some students express the sentiment that the petroleum engineering course is merely introductory. “... The course is only an introduction to what they do in the work place.

The remaining responses show that students are already aware of the reality that they might not have all the skills required, but might have a fair amount. Other insight shown relates to the idea that students may have some skill, but each unique working environment, with its own particular engineering practices will determine what is required and experience can only be gained by being in that environment. Students also acknowledge that the university cannot provide every kind of learning experience, and that it is rather laying the foundation for real world experiences which can only be experienced in the real world of work.

Important “soft” skills identified

Table (1) shows the range of specific soft skills that the majority of the student thought that they needed in order to be successful in the workplace. These skills also fall those identified as count most for the next generation of petroleum engineers [6].

Communication skills
Project management skills
Presentation skills
Creativity
Problem-solving skills
Team work skills

TABLE 1 :
common skills identified by students

Soft skills vs Hard skills

Students had to respond to the following statement. “ Soft skills like communication skills are often downplayed in engineering program while technical skills are overemphasized and create the beliefs and attitudes that soft skills are unimportant ”.

The responses were positive and students generally emphasized the importance of communication skills. One student points out that communication is a vital point of life in industry. You need to be able to communicate your ideas to others in a professional manner if you want to succeed.

One student pointed out that the training experience brought the realization of the importance of communication skills and without this realization, the student would not have known its true importance. Another student responded by saying that the lack of good communication skills could result in management seeing an individual as unable to better themselves, regardless of the amount of technical skills that the individual possesses.

The growing nature of international engineering activities makes it essential for a practicing engineer to know at least one foreign language was pointed out by a student. It is also reported on the importance to know foreign languages [8].

CONCLUSIONS

The work, in general, provides some valuable insights on the importance of various of essential soft skills. It shows that the students realize the importance of the development of technical as well as soft skills and relationship between them. The results highlight the fact that students overwhelmingly agree that communication skills are very important for a graduating engineer to possess.

Of concern are issues like training, not providing students with the opportunity to practice the skills learned at the university. Indeed, many students have expressed dissatisfaction with industry expectations with their engineering program that they may not use what they have learned.

Consequently, there is a need to equip students with the skills that employers currently desire. We must give our students a chance to develop a deeper understanding of technical subjects and use them through work in an integrated engineering context.

It is clear that students require real, meaningful, work experiences to help them further acquire and develop requisite skills in preparation for the world of work. These experiences could help to ensure that Iranian graduates, have equal opportunities to participate in the oil industry and thus the development of the country's economic.

It is hoped that the results of this study will provide useful information to educators as input to review, study and reassess their present engineering curriculum.

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