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The Teaching Skills In The Chemical Engineering Laboratory

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----------ABSTRACT----------
The competency-based education is one of the current pedagogical trends to address the teaching profession. The competence of individuals is derived from the possession of a number of attributes (knowledge, values, skills and attitudes) that are used in various combinations to perform occupational tasks. Thus, competent person is defined as one that has the attributes (knowledge, values, skills and attitudes) required to perform the work according to the appropriate standard. The authors believe that one way to acquire professional skills is through work in the laboratory. By the operation of equipment, data jacks and resolution of problems presented the teacher leads students to reflect, teaches management team, variables, conversions, how to perform calculations, logic to solve problems , the handling of tables, nomograms, charts and appendices, the integration of knowledge and information analysis

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I. INTRODUCTION

The competency-based education is one of the current pedagogical trends to address the teaching profession. The competence of individuals is derived from the possession of a number of attributes (knowledge, values, skills and attitudes) that are used in various combinations to perform occupational tasks. Thus, competent person is defined as one that has the attributes (knowledge, values, skills and attitudes) required to perform the work according to the appropriate standard. The main focus of education on performance skills is understood as "a concrete expression of the resources at stake when an individual performs an activity, which emphasizes the use or handling of the subject must do so you know, knowledge is not isolated, under conditions in which the performance is relevant, "From this perspective, what matters is not the possession of knowledge but the use made of them. This criterion requires educational institutions to rethink what is commonly considered as training. Under this view, to determine whether an individual is competent or not, be taken into account the actual conditions under which the performance makes sense, rather than formal compliance with a set of learning objectives that sometimes are not relevant to the context.
The professional competency model identifies three levels:
The core competencies, generic and specific or technical, whose range goes from broad generality to the specific.

II. CORE COMPETENCIES

The core competencies are also called key competencies necessary intellectual capacity to learn a profession in them are cognitive skills, techniques and methodologies, many of which are acquired in the previous level of education (eg the appropriate use of oral language, writing and math). The incorporation of basic skills into the curriculum requires that we consider what are the basic learning that all students should acquire at each stage, subject areas and establish the priorities needed between them. These skills are being evaluated at the baccalaureate through the PISA test.

[1] Have been established as the following eight core competencies:
[2] Competition in linguistic communication. Use oral and written language as a vehicle for learning and expression and control of behavior and emotions.
[3] Mathematical competence. Using numbers, basic operations, symbols, forms of expression and mathematical reasoning for the creation, interpretation and understanding of reality.
[4] Competition in the knowledge and interaction with the physical world. Competition, which allows you to interact with the environment to predict consequences. Show care and respect for it to seek improvement and preservation as a way to improve living conditions for herself and for others and the rest of living beings.
Social Competence and citizenship. To be able to get in the place of others, respect differences of belief, culture, religious, democratic principles, promote awareness of the democratic state, civic duty and

participation that are active citizenship. It is a basic skill that prepares the individual to live accepting values and human rights, constitutional and democratic.

[5] Competition culture and art. Learning to appreciate and respect different cultural and artistic events. Competence to learn to learn. Understand that learning is a constant need throughout life. Learning to cope with the problems and finding the right solutions at the time.

[6] Data processing and computer competence. Ability to search and transmit and transform information into knowledge. Access to information, use and transmission as well as access to information technologies and communication.

Autonomy and personal initiative. Ability to choose own choice and take responsible initiatives at both the personal and the social or occupational functioning. Involves working personal values such as dignity, freedom, self-esteem, and ability to cope with problems.

Generic competencies

The generic skills have been defined as the attributes that should have a college graduate, regardless of their profession. They can pick up generic aspects of knowledge, skills and abilities and skills that should have any title professional before entering the labor market. They are the common basis of the profession or related to the specific situations of professional practice that require complex answers. Generic skills are those that not only have a technical component, but one essentially human. Are the skills and resources we all have, for the simple fact of being human, and therefore put into play in areas where we operate.

Generic skills have been organized into three groups:

a) Powers tools: which include cognitive abilities, methodological abilities, technological skills and language skills.

b) Interpersonal skills: In which include individual skills and social skills.

c) Systematic Skills: These skills and abilities of the individual regarding the handling of complex systems.

The following tables show the list of some of these skills.

Table 1 .- Generic skills (transverse) instrumental

Capacity for analysis and synthesis.
Capacity of organization and planning.
Oral and written communication.
Knowledge of a foreign language.
Computer skills.
Capacity to manage information.
Troubleshooting.
Decision making.
Research skills.

Table 2 .- Generic skills (transverse) interpersonal

Teamwork
Working in a multidisciplinary team.
Ability to work in an international context.
Interpersonal relations skills.
Critical Thinking. Ability to critique and criticism.
Ethical commitment.

Table 3 .- Generic skills (transverse) systemic

Autonomous learning. Ability to work autonomously.
Adapting to new situations.
Generate new ideas. Creativity.
Leadership.
Knowledge of cultures and customs of other countries.
Initiative and entrepreneurial spirit.
Concern for quality.
Sensitivity to environmental issues.
Ability to apply theoretical knowledge to practice.
Using the Internet.
Experience.
Ability to communicate with non-experts in the field.
Ability to understand language and proposals of other specialists.

Professional ambition. Achievement motivation.
Capacity Self-Assessment.
Knowledge of a second foreign language.
Negotiation skills.

Specific Competencies

Finally, specific skills are the foundation including the practice and are linked to specific conditions of implementation. Unlike generic skills, specific competencies have been defined as the attributes that future graduates should acquire during their stay in college and must be defined by one's experience of graduates. The specific responsibilities have been divided into two groups: those related to disciplinary training to be acquired by graduates, called academic and disciplinary powers relating to the required professional training of future graduates. In the laboratory of chemical engineering of the students who take these levels of university education must have mastery of basic skills. At the university level is desirable to encourage the acquisition of generic skills and of course the professionals.

Competencies and the chemical engineering laboratory

The authors believe that one way to acquire professional skills is through work in the laboratory. By the operation of equipment, data jacks and resolution of problems presented the teacher leads students to reflect, teaches management team, variables, conversions, how to perform calculations, logic to solve problems , the handling of tables, nomograms, charts and appendices, the integration of knowledge and information analysis. Finally, the teacher must pursue skills of synthesis and reflection on results.

It is hoped that the students through tasks and exercises after assisting laboratories obtain the desired skills and competencies through the exercise.

Of course the laboratories have the opportunity to test the knowledge and skills obtained during theoretical courses. The teacher for the delivery of your chair should be emphasized that the students can develop attitudes and values necessary for professional development of our learners. This is done mainly by example (punctuality, love of the profession, knowledge, cleanliness, justice in evaluating, etc.).. But such attitudes can be boosted through questions that require students to reason, to seek information, to investigate the causes of things and situations that arise in the nation.

In the laboratory we have tried to put some questions to guide the students in that direction and cause distress and anxiety to know more about his career and the world around them.

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