

THE IMPORTANCE OF SOFT SKILLS IN HIGHER EDUCATION: THE CASE OF TECNOLÓGICO NACIONAL DE MÉXICO.

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Abstract -- The formation of soft skills has become relevant due to the demand for professionals capable of adapting to different work environments, which leads Higher Education Institutions (HEI) to implement them in their curricula. Its teaching, given the global context of the current labor market, takes even equal or greater relevance than technical skills, due to the competitive advantages it provides to the graduate. The purpose of this research is to analyze the guidelines, graduate profiles and subject programs of the Tecnológico Nacional de México (TecNM), in order to show how the teaching of soft skills is being addressed in this higher education institution.

The methodology used is descriptive-documentary with which we seek to present the current panorama of the teaching of soft skills in the TecNM undergraduate programs, through the review of guidelines, graduate profiles and subject programs, with a transversal approach, which allows us to address a significant percentage of the total of these programs.

The results obtained show that although the educational model contemplates the importance of soft skills in the training of its professionals, their teaching varies significantly from one program to another, and they do not have the same presence in the curricular content.

In conclusion, it is considered that despite the great benefits of teaching and developing soft skills in higher education, by providing graduates with competencies that allow them to be more competitive professionally and have better job opportunities, in many cases soft skills are relegated to a secondary level of importance, giving much greater relevance to hard skills, in opposition to what is manifested in the educational model and the graduate profiles of the TecNM degree programs.

Key words: Soft skills, Teaching soft skills.

INTRODUCTION

In order to talk about soft skills, it is convenient to start from the definition of skill, which according to the Royal Academy

Spanish is the ability that a person has to perform something with skill [1].

The first efforts to classify skills into hard and soft skills were embodied in a report by the U.S. military, who defined them as work-related skills that involve little or no interaction with machines, and that are performed in environments of uncertainty, where it is not possible to determine with certainty what will happen or what the consequences will be [2].

Soft skills are subjective precisely because they are difficult to measure, since their effectiveness will depend on the situation in which they are applied. Examples of soft skills are "leadership, communicating fluently both individually and in groups, and calmly handling moments of pressure at work" [3]. Thus, the ability to lead or communicate with skill are examples of what we can understand as soft skills.

PROBLEM STATEMENT

Globally, 19%, i.e. almost one in five managers, say that candidates lack employability competencies in the so-called soft skills required to get a job, including enthusiasm/motivation (5%), interpersonal skills (4%), professionalism, i.e. care for appearance, punctuality, etc. (4%), and flexibility and adaptability (4%) [4] [4]. Skills-based job performance seeks a balance between technology and talent, and the human connection that allows companies to achieve success [5]. "Globally, more than half (56%) of employers believe that the most valued professional skills are communication, written and verbal, followed by collaboration and problem-solving skills" [6]. Likewise, according to the International Labor Office (ILO) [7], among the skills required by companies are teamwork and

to be carried out efficiently is accompanied cooperation and leadership.

Latin American companies highlight a skills gap that is even more acute than previously thought.

Three out of four companies (out of a sample more than 1,200 companies in Latin America) report having problems filling vacancies, despite the availability of candidates. Interestingly, this shortage is greatest among large companies (250+ employees), where it affects four out of five. When companies talk about a skills gap, they often refer to soft skills. Among the top seven "missing skills," emotional intelligence, communication skills and critical thinking are mentioned three times more often than IT skills, and twice as often as financial literacy. Speaking English ranks in the middle [8].

It is important to note that the best place to acquire employability skills is on the job. However, many employers no longer willing to hire applicants who do not demonstrate proficiency in these skills.

Thus, both individuals and educational and training systems must make more effort to obtain and provide these transferable competencies [7]. Knowledge, skills and attitudes together represent the results of the competencies embodied in the various curricula of different careers. Thus, since the 4th Industrial Revolution the labor market requires digital and human skills, it is essential that education, learning and personnel selection systems are transformed to recognize and develop the skills required in this new reality [9].

Therefore, the problem that motivates the present research work is the gap that exists between skills that are required in the labor market for graduates seeking to enter the labor market and the skills that are required in the labor market for graduates seeking to enter the labor market.

The skills that employers require and demand from job candidates. It should be clarified that this gap between the supply and demand of talent is due to several factors. Educational programs do not respond to the needs of the labor market. In many aspects they are obsolete, as they not focus on the training of competencies and skills required to be an attractive and competitive talent in the world of formal work.

In the short term, there must be a dialogue between educational institutions and companies to train young people in the skills that are currently required, such as mastering a second language (English), problem solving, teamwork skills, innovation and, above all, learning to learn. Changing educational programs today means that we will see results in the next 15 or 20 years, but it is an indispensable step to ensure that we have the human talent that the country needs [10].

GENERAL OBJECTIVE

To analyze the documents that support the educational process in the undergraduate programs of the Tecnológico Nacional de México, in order to show how the teaching of soft skills is being approached in this institution of higher education.

SPECIFIC OBJECTIVES

- Analyze the Educational Model for the 21st Century. XXI in order to recognize how to approach the competencies in the educational process.
 - Review the graduate profiles and subject matter programs to determine the presence of soft skills in curricular content.
 - Analyze the proposal for the implementation of the generic skills, contained in the format Didactic instrumentation, of the Guidelines for the process of evaluation and accreditation of subjects.
 - Analyze the results of the documentary review and present conclusions.

PROBLEM DEFINITION

This research is based on the review of documents that support the educational process in the TecNM, with this an analysis is carried out in which the classification of generic competencies is determined, as well as a percentage analysis of these in the didactic instrumentation and finally a comparative analysis of the graduate profile and grid is performed, to determine the inclusion of soft skills in competencies to be developed.

THEORETICAL FRAMEWORK

An issue that has been addressed in several studies is whether the training offered in higher education institutions (HEIs) in general is really succeeding in developing these soft skills in their graduates, especially with respect to the expectations of employers.

In a study they conducted in four European countries with different educational and employment contexts, Andrews and Higson found that, in the case of recent graduates, graduates felt that they had not been able to gain sufficient experience in making verbal presentations while in higher education [11]; similarly, Ellis, Kisling and Hackworth found that, in a sample 16 community colleges in the state of South Carolina, they were failing to teach the soft skills that employers in that same state request [12]; and similarly in the study comparing the perception of students and graduates with the perception of employers, confirms that soft skills are very important in the workplace and that the training that college graduates receive is failing to train them in those required skills [13].

The difficulties that many researchers have identified with respect to the academic assessment of soft skills cannot be overlooked: "First all,

The "catalog" of soft skills has varied widely from one study or intervention to another and includes a wide range of attributes. Second, many of these attributes can only be assessed subjectively, i.e., there are no objective tests for, for example, interpersonal and management skills." according to Chamorro- Premuzic, Arteche, Bremner, Greven, and Furnham [14].

However, some successful experiences were taken into consideration, from which it should be clarified that there is no single way of incorporating soft skills training in HEIs. It was found that in some institutions, the strategy is teach a course on a specific soft skill, such as the implementation of a soft skills course in a Chinese university, in which positive results are reported regarding the teaching/learning of these skills, through validated instruments developed in Australia, which assess well-being and leadership [15]; in other institutions, the aim is to incorporate strategies to relate and develop soft skills with technical knowledge within the subjects of other hard skills, such as the incorporation of four guiding principles of teaching, implemented among the professors of a law school, to promote the development of soft skills in their students [16]. Likewise, England, Nagel and Salter's proposal to teach soft skills through a methodology based on collaborative work was also considered [17].

JUSTIFICATION

Research should be conducted in this regard because soft skills are very important for higher education graduates, since the hierarchical levels they are focused on at the end of their studies are precisely supervisory, managerial or managerial levels, or at least they do not aspire to operational levels where hard skills are more essential [18].

According to Arroyo Tovar, it is possible that, in order to enter the labor market, hard skills will be more relevant for the graduate, but in order to move up the labor market, soft skills will be more relevant even than the former [3]. In fact, there are those who suggest that these skills should be developed from basic education institutions, and given that many are directly related to emotional intelligence, they should continue to be developed and enhanced throughout students' lives [19].

In any , there is no doubt about the importance of teaching and developing soft skills in higher education training, and therefore, any study that helps to better understand this phenomenon is fully justified.

DEVELOPMENT

Based on the fact that there is no set of soft skills that can be considered as a standard or common reference, and given the large number of skills that have been considered as soft skills in different studies and analyses, it was necessary to begin by defining the set of soft skills from which our analysis and review was conducted regarding the teaching of these skills at the TecNM.

Thus, based on an exhaustive review of the literature on soft skills, we defined our set of soft skills as follows: interpersonal skills, enthusiasm, motivation, professionalism, emotional intelligence, critical thinking, English proficiency, problem solving, teamwork, decision making, leadership, oral and written communication, and values.

Subsequently, by means of the descriptive-documentary methodology, understood as "the selection and compilation of information through the reading and critique of documents and bibliographic materials", according to Baena (1985) cited in [20], we proceeded to take

The analysis consisted of searching for any of the soft skills of the set defined by the team of researchers, both in the Educational Model for the 21st Century and in the format "Didactic Instrumentation" of the Guidelines for the evaluation and accreditation process, and in the graduate and curriculum profiles of a significant sample of TecNM undergraduate programs of study.

For this last analysis, the systematic sampling technique [21] was used, in which every third undergraduate program was selected, alphabetically ordered, to obtain a sample of 13 programs, representing 32% of the total number of TecNM undergraduate programs.

Analysis of the Educational Model for the XXI Century in force at the Tecnológico Nacional de México.

The three dimensions covered in the Educational Model for the 21st Century are philosophical, academic and organizational. The first of them seeks the professional development of graduates by putting into practice "their intellectual, physical and cultural potential that will allow them to have an ethical and significant impact on the development of the community in which they will exercise their productive activity" [22], thus seeking to achieve relevance and quality in the study plans and programs; where teaching-learning leads to comprehensive development and attitudes and aptitudes are oriented to learning, learning to be, learning to do, learning to think and to live together as individual citizens and professionals. As a sense of duty in the Technological Institutes:

It seeks the awareness of its community the ethical reflection that has historically guided humanity, as a principle and foundation of individual and social development; especially with regard to human dignity, freedom, justice, equity, truth, respect, responsibility and solidarity, which must be integrated into the professional training offered and forged in our institutions, in order that those

values are assumed, reproduced and contribute to the development of individuals, regions and the country [22].

The aim is to ensure that ethical awareness prevails and is the basis for the actions of the system's graduates, supported by the values that lead them to act for the benefit of society.

The academic dimension is based on different levels; the social dimension focuses on the training and development of professional competencies according to the context, economic, social and political reality and labor demand.

The psycho-pedagogical level focuses on characterizing and determining learning processes, while the curricular level delineates study plans and programs.

Professional competence is composed of a set of procedural and attitudinal resources that are useful and practical in nature [22].

The organizational dimension is linked to the philosophical and academic dimensions, and seeks to consolidate the approach to training and development of professional competencies by having people as the origin of the institution's being.

Analysis of the format "Didactic instrumentation" of the Guidelines for the process of evaluation and accreditation of subjects of the Manual of Academic-Administrative Guidelines of the Tecnológico Nacional de México.

The Guidelines for the Process of Evaluation and Accreditation of Subjects of the current Manual of Academic-Administrative Guidelines of the Tecnológico Nacional de México were analyzed, which establishes that the document called Didactic Instrumentation for the Formation and Development of Professional Competencies must be prepared in a collegial manner in the Academy.

This document contains, among other data, the learning activities that the teacher will indicate to students to favor the development of the professional competencies established for each subject. Some of the activities suggested by the format and that would be related to soft skills are:

Participate in group activities that foster communication, the argued exchange of ideas, reflection, integration and collaboration.

To face problems that allow the integration of contents of the subject and between different subjects, for their analysis and solution. [23]

On the other hand, this format contains a section to indicate the generic competencies that are developed through teaching activities, which are those that the teacher executes in the classroom to promote the acquisition of competencies. It classifies the generic competencies into: instrumental competencies, interpersonal competencies and systemic competencies.

Table 1 shows the classification of the generic competencies and some examples shown as a proposal in the instructions for filling out the Didactic Instrumentation.

Generic competencies are also called transversal competencies because they are considered to be "common to most professions and relate to the integrated implementation of acquired skills, personality traits, knowledge and values" [3].

Analysis of the graduate profiles and curricula of the TecNM undergraduate programs.

Thirteen of the 41 undergraduate programs offered by the Tecnológico Nacional de were selected by means of a systematic sampling, is equivalent to 32% of the total number of programs at this level.

Table 1. Classification of generic competencies.

Type of competiti ion generic	Instrument competenci es ales	Interpersonal competence is	Systemic competenci es
Definition	Competencies related to the understanding and manipulation of ideas, methodologies, equipment and skills such as linguistic skills, etc. research, information analysis and analysis of the n	Individual capabilities related to the ability to express one's own feelings. critical and self-critical skills.	These are the skills and abilities that concern the systems as a whole.
Examples	• Oral and written communication in one's own language • Knowledge of a second language • Problem solving • Decision making.	• Critical and self-critical capacity • Teamwork • Interpersonal skills • Ability to work in an interdisciplinary team • Ability to communicate with professionals in other areas • Appreciation of the	• Ability to adapt to new situations • Ability to generate new ideas (creativity) • Leadership • Ability to work autonomously • Initiative and spirit

		diversity and multiculturalism • Ability to work in a work environment • Ethical commitment	undertake s dor
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Source: Own elaboration with information from Tecnológico Nacional de México [23].

DISCUSSION AND ANALYSIS OF RESULTS

Regarding the analysis of the Educational Model for the 21st Century in force at the Tecnológico Nacional de México

The model represents the actions to be followed in the educational process, which is its central axis, where the professional environment is the objective to put knowledge into practice based on the competencies of knowing, doing and being, cultivating skills such as leadership, teamwork, communication, problem solving, among others, which at the same time are combined to achieve significant learning, which helps personal and professional development.

The presence of technological institutes throughout the country is a great advantage, since the comprehensive training on which the educational model is based permeates to young people who develop professionally in different sectors nationwide, thus providing its graduates with tools in their training that serve them, in addition to putting their knowledge into practice, to do so based on values "to solve problems with creative vision, entrepreneurship and critical thinking; to be better citizens, capable of proposing alternatives for social coexistence, economic development projects and environmental sustainability, with a vision of a better future for our country" [22].

With respect to the analysis of the "Didactic Instrumentation" format of the Guidelines for the process of

evaluation and accreditation of subjects of the Manual of Academic-Administrative Guidelines of the Tecnológico Nacional de México.

Analyzing the examples of each type of generic skills proposed for filling out the Didactic Instrumentation, we can observe that 57% of the generic competencies that are suggested to the teacher to consider for the design of teaching-learning activities correspond effectively to soft skills (see Table 2).

Table 2. Percentage analysis of generic competencies in "Didactic instrumentation".

Type of generic competence	Suggested number of skills	Number of skills considered as soft skills	% Representative
Instrumental competencies	10	4	40%
Interpersonal competencies	8	8	100%
Competitive systemic	12	5	42%
Totals	30	17	57%

With respect to the analysis of the graduate profiles and the curricula of the TecNM undergraduate programs of study

Soft skills, when considered by educational institutions in the profiles and curricula of the different study programs, encourage the development of thinking and attitudes focused on covering new labor needs that will allow them to perform in the labor market.

However, determining which are the most important for each institution is complex, but according to the career, subjects and knowledge required for the job, it is possible to determine which are the most necessary.

The review of the graduate profiles and curricula of the careers on which this research was based resulted in the coincidence of what is required in the workplace and in higher education teaching of the following soft skills: interpersonal skills, enthusiasm, motivation, professionalism, emotional intelligence, critical thinking, English proficiency, problem solving, teamwork, decision making, leadership, oral and written communication, and values.

Table 3 shows the analysis of the characteristics of the graduate profile of the selected study programs.

Comparative analysis of graduation profile and grid.

Study Program	Number of characteristics of the graduation profile directly related to ability is soft	Total of characteristics of the graduate profile	Number of subjects directly related to soft skills	Total number of assignments
Aeronautics	0	7	8	45
Biomedical	3	13	6	45
Community Development	1	9	8	44
Electronics	5	19	5	45
Geosciences	2	15	6	47
Industrial	1	18	8	47
Sustainable Agriculture	2	14	5	44
Innovation				
Mechanics	5	16	4	46

Nanotechnology	14	27	4	45
Oil company	3	11	4	43
Systems Computers	2	11	5	46
Administration (bachelor's degree)	3	15	11	45

Own elaboration with information from [24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 Y 36]

The soft skills mentioned for some people may be innate and have been put into practice throughout their lives or there are those who do not know the ability they have regarding them, but there are also people who have to learn to develop them, so education in this case higher education by having them as part of their transversal competencies gives students the tools that in the workplace can represent opportunities for professional success where the know-how of each individual is put into practice.

CONCLUSIONS

It should be pointed out that the educational model in force at the Tecnológico Nacional de México not only takes into account soft skills, but actually gives them a great deal of importance, and according to the analysis out, soft skills are clearly present. We can conclude that, as far as its educational model is concerned, soft skills are an essential part of the training that must be provided in the institutes of the TecNM.

Similarly, the result of the analysis carried out shows the way in which the paradigm of training in professional competencies has been fully adopted, and its concepts permeate in depth in the academic guidelines and in the formats in which teachers have to formalize the planning of their subjects. We can find that the generic competencies, fully identified and subclassified, fully take up the aspects that we consider as soft skills. The guidelines and the format analyzed not only allow, but also encourage and facilitate the inclusion of soft skills within

the competencies to be taught and evaluated. This is very relevant, and allows us to conclude that, as far as the academic guidelines and their formats are concerned, there is no omission about the role that soft skills should have in the training of TecNM students.

On the other hand, the analysis of the graduate profiles and the subjects that make up the grids of the bachelor's degree programs shows a slightly different result from the two aspects mentioned above. Given that the percentage of characteristics of the graduate profiles that refer to soft skills is low, there is definitely the possibility that, despite the stipulations of the educational model and the guidelines and course planning formats, the training received by TecNM students is not giving the importance that soft skills require for today's work environment.

It could be argued that the graduation profile of an educational program in the hard sciences, specifically in the area of engineering, should primarily describe the hard skills that the graduate should possess upon graduation. However, part of the intention of the present analysis is to show that even in the work environment of professionals specialized in the hard sciences, soft skills continue to be equally or more important for their training than hard skills. This should be clear from all the information that was reviewed as background for the present analysis, and as long as this importance is not understood, the academic load of technical subjects, and the description of the profile with which TecNM students must graduate, will continue to be inadequate for the demands of the current labor environment.

A relevant topic for future research is teaching practice with respect to the teaching of soft skills, or generic competencies. Given that a good number of authors consider that the teaching-learning of soft skills is best achieved through strategies that incorporate them along with the work that is done in the classroom.

The idea is to train teachers in soft skills, emotional intelligence and ethics, so that they will be able to teach them to their students, either in the classroom or in the classroom. Evidently, this is an interesting topic, since in essence what they propose is to train teachers in soft skills, emotional intelligence and ethics, so that they are able to teach them in turn to their students, either by example, or in an integrated manner in the teaching practice of their subjects on hard skills.

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