

Los jóvenes universitarios de ingeniería y su percepción sobre las competencias blandas

Young University Students of Engineering and Their Perception of Soft Skills

Jovens estudantes de engenharia e sua percepção de habilidades sociais

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Resumen

Empresas especializadas en el ejercicio de la ingeniería expresan que, bajo esta nueva era del conocimiento, los egresados de las carreras ingenieriles requieren un complemento de habilidades interpersonales sobre su conocimiento técnico. Las habilidades blandas podrían ser la respuesta a esta necesidad.

El objetivo de este trabajo fue estudiar la percepción de estudiantes de las carreras de ingeniería de un tecnológico federal de la Ciudad de México con respecto a las competencias blandas adquiridas en su formación académica. Esto para identificar aquellas habilidades blandas no cubiertas en su totalidad. Para ello se realizó un estudio transversal y descriptivo con una muestra de 929 estudiantes; se recabaron y procesaron los datos con la técnica de cuestionario y el *software* SPSS, y se emplearon técnicas estadísticas como la de análisis factorial y los modelos lineales generalizados.

Los resultados muestran la falta de habilidades sociales y emocionales: la de resolución de problemas, la falta de comunicación, de estrategias para el eficiente procesamiento de información y una poca creatividad. Se concluye que las habilidades blandas dentro de las carreras de ingeniería son una necesidad no cubierta en su totalidad y que estas deben reforzarse a través de programas que permitan obtener herramientas que generen egresados competentes en conocimientos técnicos y transversales.

Palabras clave: competencias blandas, educación superior, habilidades sociales y emocionales, ingenierías.

Abstract

Companies specialized in the practice of engineering express that, under this new era of knowledge, graduates of engineering careers require a complement of interpersonal skills on their technical knowledge: soft skills could be the answer to this need. The objective of this article was to study the perception of students of the engineering careers of a federal technological of Mexico City with respect to the soft skills acquired in their academic training to identify those not covered in their entirety. A transversal and descriptive study was carried out, with a sample of 929 students; the data was collected and processed with the questionnaire technique and the SPSS software. And statistical techniques were used as factor analysis and generalized linear models.

The results showed the lack of social and emotional skills such as: problem solving, communication, conflict resolution, strategies for the efficient processing of information and creativity. It is concluded that the soft skills within the engineering careers are a need not covered in its entirety and these must be reinforced through programs that allow obtaining tools that generate graduates competent in technical and cross-cutting knowledge.

Keywords: soft skills, higher education, social and emotional skills, engineering.

Resumo

Empresas especializadas na prática de engenharia expressam que, sob essa nova era de conhecimento, os graduados em carreiras de engenharia exigem um complemento de habilidades interpessoais em seus conhecimentos técnicos. Habilidades macias podem ser a resposta para essa necessidade.

O objetivo deste trabalho foi estudar a percepção de estudantes das carreiras de engenharia de uma tecnologia federal da Cidade do México no que diz respeito às soft skills adquiridas em sua formação acadêmica. Isso é para identificar as habilidades sociais que não são cobertas em sua totalidade. Para tanto, foi realizado um estudo transversal e descritivo com uma amostra de 929 estudantes; os dados foram coletados e processados com a técnica do questionário e o software SPSS, e foram utilizadas técnicas estatísticas, como análise fatorial e modelos lineares generalizados.

Os resultados mostram a falta de habilidades sociais e emocionais: resolução de problemas, falta de comunicação, estratégias para processamento eficiente de informações e pouca criatividade. Conclui-se que as habilidades leves dentro das carreiras de engenharia são uma necessidade não coberta em sua totalidade e que estas devem ser reforçadas através de programas que permitam a obtenção de ferramentas que gerem graduados com competência em conhecimentos técnicos e transversais.

Palavras-chave: habilidades sociais, ensino superior, habilidades sociais e emocionais, engenharia.

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Introduction

Companies in new areas of application for engineering skills, such as technology transfer centers, industrial parks, engineering companies and implementation organizations, request younger, professionally advanced personnel with interpersonal skills. Engineering students, however, seem to show shortcomings with respect to the latter, also known as soft skills, which reflects a global gap between education and employability, and as a consequence results in a lack of success in current workplaces (Meissner and Shmatko, 2018; Lennox and Ross, 2017).

The institutions of higher education in engineering have the challenge that the educational objectives of the careers, and the competences acquired through them, respond to the demands of the sectors of society.

The competences that must be developed in the careers are mentioned within the educational models. In addition, defined within the curricula of each subject that make up the curriculum and whose radiography is framed in the curriculum. Students who pursue engineering careers must obtain from the institutions a diversity of knowledge and skills that allows them to perform satisfactorily in the organizations to which they will be incorporated in the future. The way to identify if the competences were acquired is through its application in the labor and social field.

Some of the most relevant skills required by the labor market and society in general are "non-cognitive" or "soft" skills: both difficult to include in engineering curriculums. However, as already mentioned, they are important for academic and life success, and can make a difference when young engineers look for job opportunities in the market (López et al., 2018). Consequently, according to Deveci and Nunn (2018), Meissner and Shmatko (2018) and Ureña and Martínez (2017), because not all young people who graduate from university careers achieve the level of skills demanded by the sectors of the society, which are required by employers in the medium and long term, are forced to take training and development programs to improve their weaknesses.

Research reveals, in relation to the acquisition of soft skills, that the perception of engineering students is favorable, as they are considered capable of strengthening those they perceive as weak. Based on the above, the modification to the study plans is unquestionable. Even more: it is a need of the first order, because it would trigger a better development and

understanding about the importance of soft skills with respect to their technical knowledge. A change in accreditation criteria within the curricular grid of traditional engineering will provide a broader and more robust picture to achieve the desired objectives or competencies (Byrne, Weston and Cave, 2018, Bastarrica, Perovich and Sama, 2017; Veraldo et al. ., 2017).

On the other hand, it was also found that the perception of the students with respect to the subjects that try to strengthen these competences is of dissatisfaction, in addition to detecting negative reactions on the part of the students towards these courses (Schipper and van der Stappen, 2018; et al., 2018). Finally, there are studies that show the development of professional skills and personal progress of students in which the need for employers and graduates to develop specific skills to get a job (Adnan, Daud, Alias and Razali) is highlighted. , 2017; Egorova, 2016).

Faced with this panorama, the research question that we wish to answer here is the following: What is the perception of soft skills that young people consider they have acquired in engineering careers? The objective is to study the perceptions of the students about the soft skills that they consider they have obtained during their transition in the race to reach a general diagnosis of the situation of the phenomenon. In addition, identify the areas of opportunity that allow recognizing those skills that are not being fully covered and that may disadvantage engineers who, due to the nature of their work, must live and lead diverse groups of people.

Theoretical framework

The Tuning project focuses on the development of competencies and addresses them by thematic areas. As of 2010, it works intensively to achieve high rates of employability for university graduates, therefore, develops studies that have generated as a result a European dictionary of skills and competencies, identified and categorized as those needed for the labor market (Asonitou and Tromaridis, 2017).

Based on the above, one can define as competence the set of knowledge, traits and abilities attributed to people to perform the duties of a specific position (Razak, Shariff, Zainol, Radha and Ahmad 2018). On the other hand, Matteson, Anderson and Boyden (2016) define it as the ability to access knowledge from a specific base of it, in order to perform an action or carry out a particular task.

While authors such as Schipper and Van der Stappen (2018) and Holguín, Tavera and López (2018) emphasize attitude as the main element of soft skills, because it is the most important factor in encouraging the learning of its other components, because this, the attitude, directly influences the personality of each of the individuals and, in addition, is considered the initiative that allows the complementary learning obtained. Then, a competence is a series of knowledge, procedures and attitudes that allow people to apply knowledge and exercise them with values and ethics (Tejada and Ruiz, 2016).

In short, it is possible to define the term competence from different factors, however, in a general way, it can be understood as "know-how" from a set of knowledge (theoretical-practical), affectivity, commitment, cooperation and compliance; all of which are expressed in the performance of an action (Chavarría, Vivas and Gaibor, 2016).

Now, Rao (2014) divides the competences into two types: hard competitions and soft skills, in order to differentiate between technical and interpersonal skills. The term soft skills is used for those that are not specific and that are required mainly when relating with other people involved in the organization, that is, personal skills that correspond mainly to the cognitive, thinking, and social field. While hard skills, on the other hand, allude to the specific abilities to perform a particular job, that is: their technical knowledge (Cimatti, 2016).

And according to Amini (2016) and Meissner and Shmatko (2018), there is a tendency for many engineers to manage or take on more social and less technical tasks in their jobs. In other words, the capacities of interpretation of the social environment, communication skills, human relations management, decision making, leadership, teamwork, adaptation to change and self-learning are highly valued, which, as already mentioned, are qualified and required by employers to a greater degree than those held by graduates.

In the literature, various lists are mentioned that generalize the inventories of soft skills that are required at present. Professionalism, initiative, negotiation, leadership, self-esteem, reliability, problem solving, empathy, ability to work under pressure, planning and strategic thinking, teamwork, work ethic, flexibility, good oral and written communication, management of information technologies, creativity and self-confidence, good self-management and time management skills, willingness to learn and accept responsibility, critical thinking, decision making, respect and creativity, are some of the most mentioned for the current exercise of an

engineer (Meissner and Shmatko, 2018, Vogler et al., 2018, Adnan et al., 2017, Cimatti, 2016, Ramlan and Ngah, 2015, Chatterai and Shabnam, 2015, Ellis, Kisling and Hackworth, 2014, Berglund and Heintz, 2014).

For his part, Butkovic (2018) mentions that an engineer who works in management activities must have the ability to control, manage, analyze and communicate everything that is planned, just as he has to know how to negotiate within the organization. In this regard, the first writings on administrative competences describe typologies that include the essential functions of an administrator. In these are mentioned the technical, administrative, human skills and those competences oriented to the citizenship (Snell, Tonidandel, Braddy and Fleenor, 2014). In addition to this, researchers like Amini (2016) add that managers must know how to develop and apply methods and techniques that allow them to efficiently perform their work and know intervention processes to solve complex problems, as well as develop strategies to understand the changes and adapt to them.

Ariratana, Sirisookslip and Ngang (2015) emphasize that leadership is one of the management skills that bring greater benefits to organizations. Likewise, it has been mentioned that managers must have the capacity to manage staff, so they must be able to communicate effectively (Petrikova and Sorokova, 2016). In turn, political ability is a variable that has been pointed out by Snell (2014), who says that politically qualified individuals are able to identify deficiencies in the environment and achieve negotiations with enormous benefits for organizations. Finally, there are studies that indicate that the work of an engineer in an administrative position requires social and emotional skills that promote coordination, proactivity and customer-centered relationships (Zařková and Poláček, 2015; Treadwell, 2014)

Companies today seek to maintain a competitive advantage by hiring engineers and multidisciplinary graduates who combine technical ingenuity with soft skills in their favor. Despite perceiving the engineers as individual technical contributors, the nature of engineering work in the postindustrial world has changed significantly: now much more than the technical experience gained in the university and for the experiences is required. So the success in their jobs now also depends on a set of interpersonal skills, including communication, teamwork, management and business skills (Itani y Srour, 2015).

Methodology

The present is a cross-sectional and descriptive study of a quantitative nature. The data collection was carried out in May 2017 at a federal technological institute. The school currently has an approximate population of 2,400 students who complete five careers in the engineering area. The sample was calculated on the knowledge of the population size, with a confidence level of 95%, margin of error of 5% and with a probability of success of answers of $p = 50\%$ and $q = 50\%$, which yields a result of $n = 332$. The withdrawal of the questionnaires and the disposition of the young people allowed us to obtain a data production sample of 929 participants. It should be noted that four applicators were trained, who supported during the two shifts of the educational institution.

The National Technological Institute of Mexico is a higher education institution that since 2010 began operating in Mexico City. With many efforts, currently operate 12 campuses in different city halls. Denied the space in other places for not achieving the necessary points for the entrance, many young people find here access to higher education. In addition, schools work under the educational model for the 21st century, with training and development of professional skills. It is very important to point out that the decision was made to work with the young people of the National Technological Institute of Mexico located in the Gustavo A. Madero mayor's office, since only engineering-related careers are taught.

It is also worth noting that a piloting was carried out to know the behavior of the data and a Cronbach's alpha of 0.917 was obtained. The applied instrument consisted of 17 questions that inquired about personal characteristics, school and family environment; of 17 items evaluated on a Likert scale that questioned different generic competences, and, finally, of an open question about the actions carried out by students when they do not receive the necessary tools from the university.

Later, the factor analysis was used to calculate the correlation coefficient of the items that make up the competences (see table 1). Likewise, the data were analyzed using generalized linear models to differentiate the categories and independent variables. Therefore, the model was divided into two parts. The first analyzed the variables of the genre, the race, the turn, the number of subjects failed, the way of learning, the perception of how much a graduate earns, the

semester, the reason why he attends school and if he is currently working. The second considered the variables of whether it has a scholarship, language, schooling and occupation of parents.

Tabla 1. Matriz de correlación del análisis factorial

Factor 1. Competencias blandas	Coefficiente de correlación
Consideras que cuentas con iniciativa y decisión en la resolución de problemas.	.693
Crees que te puedes comunicar de manera eficaz con tu entorno.	.684
Consideras que eres flexible al cambio de un proceso o forma de trabajo.	.672
Consideras contar con la habilidad para resolver conflictos.	.662
Piensas que eres capaz de separar lo personal de laboral.	.621
Consideras que procesas la información de manera rápida y eficaz.	.608
Consideras tener la capacidad de generar nuevas ideas, alternativas o soluciones.	.591
Te mantienes informado acerca de tendencias y nuevos conocimientos de tu área de estudio y/o laboral.	.560
Crees que puedes trabajar con facilidad en equipo o con otras personas.	.556
Consideras que cuestionas las ideas tanto propias como de la gente que te rodea.	.552
Consideras que te relacionas con las personas con facilidad.	.540
Piensas que afrontas los retos del día a día con facilidad.	.498
Te consideras persuasivo, o influyente en las decisiones de las demás personas.	.492
Realizas autocríticas y/o autoanálisis continuos para seguir mejorando tu persona.	.490
Buscas retroalimentación de tus errores para poder corregirlos.	.480
Reaccionas con calma a situaciones de adversidad o problemas.	.462
Piensas que le das a los medios electrónicos el máximo aprovechamiento dentro de tu área de estudio y/o laboral.	.461

Fuente: Elaboración propia

Results

In terms of gender, 61% of the participants were men and 39% were women. The average age was 22.5 years. And the average grade of 7.99. In addition, 62% of young people declared that they did not have failing subjects, while 27% indicated that they had failed subjects; 7% two of these and 4% more than four. Students were questioned about the way they think they learn best: 62% said that when the teacher only talks, 23% when using images and 15% said that when the teacher performs dynamics. Also, they were asked about how much they think a graduate earns: 45% said that a professional in their area receives a salary of between 6000 and 9000 pesos, 36% of more than 10,000 pesos and 19% said that between 4000 and 6000 pesos. In turn, they wanted to find out why they attend the Technological: 67% said they like the career in which they are enrolled, 6% emphasized that they attend because it is the career that has been studied in their family, 5% mentioned that they attend the semester to change career, 7% said that the school is close to home and 15% said it was the option assigned.

In addition to the above, 62% of young people said that currently they do not work and 38% said otherwise, that they are already part of the labor field. Similarly, it was inquired whether the students have any scholarships: 22% said yes and 78% said no. They were asked if they were fluent in any language: 43% said none, while 34% mentioned English proficiency, 3% said French, and the rest did not respond.

Similarly, the young people were asked questions about their family environment: 33% said their dad attended high school, 28% up to high school, 20% who have a graduate degree, 8% who attended only primary and 11% said that his father does not have studies. Regarding their current employment, 49% indicated that their father works in a company, 38% said they work on their own and 13% are unemployed. Regarding the schooling of the mother, 32% said that her mother has completed high school, 30% secondary, 18% said that her mother has a graduate degree, 10% primary education and 10% said that her mother has no education. Finally, 23% of the participants said that their mother works for a company, 25% that on their own and 52% emphasized that they are dedicated to the home.

Soft competitions

This factor groups 17 variables that measure factors related to soft skills. The study showed that 58% of young people believe they have the initiative to solve problems; 34% said that sometimes has this initiative. Also, they were questioned about their way of communicating to know if they execute this competition effectively: 56% emphasized that they are effective in communicating with the environment, while 34% believe that sometimes and 9% consider that they do not communicate in a way effective. On the other hand, 61% admitted having the ability to adapt to any change that may occur in the way they work, 29% mentioned that they can sometimes count on said capacity and 9% confessed that it is not part of their repertoire of skills. In addition, 56% considered that they have the ability to resolve conflicts, 34% that sometimes and 10% thought that in most cases they do not know how to offer a solution. Also, the students were asked if they were able to separate their personal problems from their work activity: 63% said yes, while 26% of the respondents emphasized that sometimes and 10% said no. When asked if they are capable of processing information quickly: 45% said yes, 43% felt that sometimes and 12% said no.

On the other hand, 56% of the respondents said that they believe they have the capacity to generate new ideas to solve problems, 34% said that sometimes and 10% indicated that they do not perceive having this competence. The study also asked them if they were kept informed about trends in their area of study or work: 40% considered yes, 46% said that sometimes it is kept up-to-date and 8% thought it was not. Regarding teamwork, 59% stated that they are facilitated to work as a team, 30% thought that sometimes and 11% denied the ability to collaborate in a group. In addition to this, 46% said that they question both their own ideas and those of others, but 39% indicated that they only do this on occasion.

Similarly, young people were questioned about whether they consider them to be easily related: 47% believe that they do, but 39% of respondents said that they sometimes live with others, and 12% considered that they do not. have that competence. In the investigation, in addition, the students who formed the sample were asked if they think that they face the challenges that are presented to them every day: 53% considered that they always find a way to face the challenges, while 37% perceived that sometimes they can with these challenges and others do not and 10% considered not being able to deal with them. However, when asked if they

consider themselves persuasive and influential in the decisions of others: 40% said yes, while 39% expressed that sometimes and 11% said that they are not capable of influencing the decisions of others. others.

Finally, 51% of students think they are capable of self-criticism and self-analysis to continue improving their person, 33% believe that they sometimes perceive that capacity and 16% do not feel that they can perform this introspection analysis. In turn, 60% seek feedback on errors so that they can correct them, 26% sometimes and 14% do not consider having that capacity. They were also questioned about whether they react calmly in situations of adversity: 51% think they do, 34% sometimes, and 15% do not think they have that calm. Finally, 56% of young people believe that they take advantage of electronic media.

Once the aforementioned data were obtained, a generalized linear model was executed, which allows us to work with multivariable models in order to know the main effects of each one of them in relation to the main variable, which is the factor one that measures the competences that they integrate personal skills. The variables that were run in the model are gender, career, turn, failed subjects, ways of learning, knowledge about how much a graduate earns, the semester, the reason for attending school, knowing if the student works, the scholarships, the languages, the schooling of the parents and their work activity. It is necessary to mention that for the quantity of variables the model was executed in two parts.

Tabla 2. Factor uno, primera parte. Prueba ómnibus

Ji al cuadrado de		
razón de	gl	Sig.
verosimilitud		
143.916	41	.000

Variable dependiente: factor1

Modelo: (Intersección), Género, Carrera, Turno,

M.reprobadas, Aprendizaje, C.Gana.egresado,

Semestre, Razón.de.asistencia, Trabajas.

a. Compara el modelo ajustado con el modelo de solo intersección

Fuente: Elaboración propia

Tabla 3. Factor uno, segunda parte. Prueba ómnibus

Ji al cuadrado de razón		
de verosimilitud	gl	Sig.
32.807	26	.168

Variable dependiente: factor1

Modelo: (Intersección), Eres.becado, Idioma, Escolaridad.papá,
Escolaridad.mamá, Oficio.papá, Oficio.mamá

a. Compara el modelo ajustado con el modelo de sólo intersección.

Fuente: Elaboración propia

In the first part of the model, the omnibus test showed a difference in the main effects of the model ($p = 0.00 < 0.05$) (see table 2), in contrast in part two of the model no variation was found ($p = 0.168$). > 0.05) (see table 3). In the first part of the model, we identified the variations in the career ($p = 0.00 < 0.05$), the failed subjects ($p = 0.02 < 0.05$), the ratio of school attendance ($p = 0.00 < 0.05$) and if it works currently ($p = 0.00 < 0.05$) (see table 4). According to the results obtained by marginal means, with respect to careers, the Engineering in Transportation is the one that best perceived the skills related to personal skills, also called generic. On the contrary, the Computer Engineering degree earned the least points, which means that the young people assigned to it need to strengthen those competences.

However, a significant effect was found with respect to the number of subjects failed. This is: students who do not have failed subjects qualify better the acquisition of soft skills; On the other hand, students with more than three failed subjects are those who appreciate these skills to a lesser extent. Regarding the forms of learning, it was found that the students who indicated that they learn better when the teacher performs dynamics are the ones with higher scores in the soft skills, in contrast to the students who say they learn more when using images, who scored lowest under this factor. In relation to the reasons for attending school, this work showed that the students who said that they attend because it is the option assigned to them are the group that best qualifies the variables of the dimension under study; while the young people who say they attend because they are close to their home are the ones who give less value to personal skills.

Table 5 shows the evidence of the effects of the model in its part two.

Tabla 4. Factor uno, primera parte. Pruebas de efectos del modelo

Origen	Tipo III		
	Ji al cuadrado de Wald	gl	Sig.
(Intersección)	135.299	1	.000
Género	5.442	2	.066
Carrera	26.551	5	.000
Turno	1.627	4	.804
M.reprobadas	14.616	6	.023
Aprendizaje	20.801	4	.000
C.gana.egresado	8.589	4	.072
Semestre	6.127	7	.525
Razon.de.asistencia	31.336	6	.000
Trabajos	31.450	2	.000

Variable dependiente: factor1

Modelo: (Intersección), Género, Carrera, Turno, M.reprobadas, Aprendizaje,
C.Gana.egresado, Semestre, Razón.de.asistencia, Trabajos^a

Fuente: Elaboración propia

Tabla 5. Factor uno, segunda parte. Pruebas de efectos del modelo

Origen	Tipo III		
	Ji al cuadrado de		
	Wald	gl	Sig.
(Intersección)	264.420	1	.000
Eres.becado	1.364		.506
Idioma	13.476	4	.009
Escolaridad.papá	10.114	6	.120
Escolaridad.mamá	1.475	6	.961
Oficio.papá	2.066	3	.559
Oficio.mamá	4.234	5	.516

Variable dependiente: factor1

Modelo: (Intersección), Eres.becado, Idioma, Escolaridad.papá,

Escolaridad.mamá, Oficio.papá, Oficio.mamá

Fuente: Elaboración propia

They were asked, in addition to everything that has already been said, about the obstacles they consider to be presented in order to obtain those competences they consider important, and the students' comments are categorized in the following options (see table 6):

- Personal obstacles
 - School difficulties
 - Economic and family difficulties
 - Personal and attitudinal difficulties
- Teachers
 - School promotion
 - Teacher capacity and knowledge
- No difficulty
- School and facilities
 - Facilities
 - Lack of practices

Tabla 6. Categorización de respuestas de los estudiantes a la siguiente pregunta: ¿Existen causas que te impiden desarrollar las competencias que deseas adquirir y/o que no te han quedado suficientemente interiorizadas? ¿Cuál/es?

Obstáculos personales	Profesores	Escuela e instalaciones
Dificultades escolares	Fomento escolar	Instalaciones
47 Se me dificultan los exámenes.	40 Que los profesores fomentan a que no trabajemos más.	88 Algunas instalaciones no son lo suficiente.
92 El grado de dificultad.	69 Que nos enseñen, no que nos pongan a investigar.	32 Falta de recurso tecnológico para realizar prácticas, manejo de conocimiento de profesores, que haya más plan de estudios renovados y persuasivos, interesantes. Las pocas herramientas que hay en el instituto, no hubo buena planeación y faltan maquinarias o herramientas.
Dificultades económicas y familiares.	Capacidad y conocimiento de los profesores.	36 La falta de laboratorios prácticos, así como manipular maquinaria real
55 Economía y problemas familiares.	57 La manera que enseñan algunos maestros para mí no es la correcta.	41 Las aulas sin material necesario.
14 La falta de dinero.	12 Los profesores no son capaces de desarrollar los planes de estudio.	67
75 Economía y cómo sacar dinero rápido, aunque sea poco, pero de poco en poco sacar algo de dinero.	18 Los maestros que no tienen el conocimiento suficiente.	Falta de prácticas.
Dificultades personales y actitudinales.	32 Porque hay muchos profesores que no saben y permiten que den clase.	17 No cuenta la escuela con prácticas durante la carrera.
61 El de mi persona que no siempre quiera hacerlo.	33 Que algunos profesores no explican algunas cosas que no quedan muy claras.	20 Más salidas a campo de empresas, para que los alumnos se sientan más atraídos hacia su carrera.
96 Mi flojera, mi desorganización, mi estrés.	50 La ineficiencia de los profesores	41 La falta de práctica de lo aprendido, ya que solo se queda en teoría.

42 6	Ser una persona conformista	54 9	Un poco más de atención por parte de los maestros	71 5	Falta de actividades prácticas.
43 4	En algunas ocasiones no pongo atención	60 8	Como los profesores llevan las clases.	74 8	La falta de práctica en el proceso de aprendizaje.
67 8	La falta de prudencia e interés.	70 8	A veces los maestros no cumplen con su trabajo.	76 2	Dominar la teoría y pocas prácticas en algunas materias.

Fuente: Elaboración propia

Discussion

The results obtained reflect the need to work with the skills, such as the initiative to solve problems, communication, the resolution of conflicts, strategies for the efficient processing of information, creativity to generate new ideas, tools to keep updated within their field of knowledge, to relate and to face new challenges, as well as new ways to be persuasive and influential in others. The above undoubtedly confirms what was mentioned by authors such as Deveci and Nunn (2018) and Holguín et al. (2018), who assure that engineering students are considered weak in soft skills, which should continue to develop during their career in college and are requested by employers in the current job market. If these skills are polished and perfected during the courses taught in the years of study, they can positively help them to become excellent professionals (Sukiman, 2017). However, it should be emphasized that these results are only valid for the population in which the study was applied, so it would be necessary to develop similar research in other engineering institutions.

In addition, it was possible to observe how attitude and motivation are determining factors in the acquisition of these competences. According to the students, laziness and their own lack of motivation are one of the most important reasons why they do not develop the skills they wish to acquire. And despite considering the abilities and knowledge of their teachers as an obstacle to their development, it is the students who admit that their lack of interest in the development of these skills is also a reality.

One should not look at the role played by teachers or students separately, nor as the only causes of this lack of learning; Emphasis should also be placed on a change in the student-

teacher relationship, which can be achieved when a common objective is established and the apathy of those involved is left aside, and taking into account that students' perceptions of their Teachers are a factor that determines the sense of belonging and persistence within their careers, while, on the other hand, the teacher must be clear about the vocation and the role he plays, without being affected by the interests of his institute, towards where the productivity of research and high-level professional activities on student-focused education are better rewarded (Carberry and Baker, 2018, Davis, Moise, Cheon and Nolen, 2018, King, 2012). So we suggest a study that integrates this perspective, the point of view of teachers, knowledge facilitators, as well as carrying out this same study in private universities, and thus complement the panorama of this need from most of its slopes.

Conclusions

To achieve an increase in the development of soft skills in university students requires the effort of all stakeholders. Consequently, it is necessary for parents, the university and students to change their vision and understand this need. In addition, educational systems are required to support students and provide adequate tools and knowledge to help them reflect and understand that their reason for attending school is not only to accredit subjects, but it is an important source for learning and develop soft skills, which are necessary to achieve success in the world of work that is becoming more demanding every day.

The implications for higher education institutions lie in the identification of strategies that generate the generation of alternatives that, in turn, contribute to the development of soft skills in students. These are a necessity in the industry. So it is necessary to emphasize the need for a combination of technical skills and soft skills for the proper development of engineering practice

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