

Conjunction of Educational and Technological Efforts for a Socio-Economic Improvement

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Abstract: *Currently, the global health, social, economic and political environment is complicated and it is where science and technology have acquired relevant importance in solving problems, especially engineering, bioengineering, information and others.*

Education at a professional level should not only be based on fundamental knowledge but also on its application, technological development, research, technical, economic, social, health and environmental innovations.

A fundamental part of this requirement is the training of students with Professors who not only teach the subject of their specialty, but also have experience in the industry and can carry out activities of technological development and applied research to solve real problems.

Due to the loss of jobs that has occurred, it is essential to create new sources of work.

Given the lack of work for engineering professionals, a viable alternative is to create Work Groups with students in their last two years of studies to create micro-industries that take advantage of the natural resources of the region, technological innovation and are committed to the environment. social and environmental protection.

Current Situation

We are experiencing a new world socio-economic order that is demanding new challenges from Science and Technology, therefore from Education at the Undergraduate and Postgraduate levels to help solve health, food and economic problems mainly.

In Mexico, the National Institute of Statistics and Geography, INEGI, an Autonomous Constitutional Body, reported that from October 2020 to July 2021 about 1.6 million mini and small industries, mainly, closed due to the health emergency. resulting in job losses.

A mini company is considered to be one with up to 10 workers and a medium company is one with between 11 and 30 workers. Micro and small companies represent 80% of all companies.

These businesses, in addition to generating profits for the economic support of millions of people, paid taxes and so did the workers. With these changes, the manufacturing industry has had to adapt to the needs of the market. The food industry has also made changes to be consistent with the new socio-economic situation.

The countries require professionals with solid training in theoretical and practical knowledge who participate in Technological Development, Innovation and Research processes of the highest scientific level.

To achieve this purpose, it is necessary that the academic training of the professional is not only the acquisition of theoretical studies but also practical knowledge, whether laboratory, industrial or agricultural.

Education was declared by the UN for more than 40 years as a basic need for humanity.

Education is a complex process since various elements interact: students, teachers, conditions of educational institutions, family and social context.

With the current socio-economic and technological situation, the training of professionals in diverse areas requires substantial changes in the study programs of Engineering careers, mainly where the teaching of knowledge is not only theoretical but also practical so that students have a broad, flexible and more solid training, with skills and aptitudes to function in a new social environment that demands different attitudes such as critical reflection and the use of students' skills and talents, as well as fostering the ability to work in multidisciplinary teams with creativity. Not only that they learn to install, operate and maintain equipment but also encourage innovation

Technological education mainly for engineers should be a solid technological and scientific training. To achieve this, educational institutions must develop open curricula with a broad and flexible profile, predominating novel and innovative teachings and thus contribute to the preparation of professionals in accordance with reality, motivating their creativity and developing particular skills and talents with which their preparation professional is to solve problems of

technological and scientific developments and providing solutions to socio-economic and environmental problems.

For this, teachers are required to have experience in imparting both theoretical and practical knowledge. Given the shortage of jobs in Mexico, due to the closure of companies there are students who finish their Bachelor's degrees and begin to teach classes at a professional level. This type of teachers only transmit textbooks of the subject.

In Mexico, the Educational Centers where undergraduate degrees are taught are usually in the main cities and in the rural environment that is predominant in the country there is a shortage.

In the rural environment, there are localities where fruits and vegetables abound that are consumed directly and in the best of cases they sell them receiving minimum payment for their products, which does not satisfactorily compensate their laborious work.

Examples include orange, lemon and other citrus fruits, pineapple, watermelon, melon, apple, mango, banana, avocado, tomato, onion.

There are two foods native to Mexico, they are nopal and amaranth, which have a high content of vegetable proteins and are consumed naturally. These two vegetables are from semi-arid areas. Its cultivation does not require fertilizers.

There is another natural product that also provides nutrients, it is honey. The largest number of producers are located in the southeast of the Mexican territory.

In 1980, Mexico became the first producer and exporter of honey in the world and, paradoxically, the one that consumed the least. Currently it is no longer so.

Proposal

One solution option is for young people to study a career in the region where they were born and for these Educational Centers to have Masters at the bachelor's level who transmit their theoretical and practical knowledge, inducing them to develop their skills and talents by joining them with those of other peers to form teams. that initiate and develop technological processes for the benefit of their locality.

An alternative is the use of Appropriate Technologies which are the use of the natural resources of the region for the benefit of the population and that also do not have technological dependency.

The cultivation of fish such as tilapia in bodies of water that receive rainwater can be cited.

These fish can be fed with mixtures of vegetables from the region without having to depend on a balanced feed. In addition, it can serve as food for the inhabitants of the region and take advantage of the heads, tails and skeletons to make balanced food for smaller species such as birds, rabbits and sheep. Another option is to pack these fish and thus be able to keep them for longer or market them.

They can also have chickens that provide them with eggs and meat. As for the fish, teach them to prepare food based on inputs from the region. By having these animals they can improve their diet and even market their meat.

The feces of these animals can be used as a component in the production of fertilizer to improve crop soils.

Rabbit farming can also provide them with meat for food, take advantage of the skins to sell them or to make vests and belts. The feces can be used as a fixative in the production of perfumes.

In Mexico there are coffee areas where, in addition to the use of the grain for making coffee, the trunks of the trees can be used to make wooden handicrafts.

Bee honey, in addition to being used as food, can also be used in pharmaceutical products.

Amaranth The entire Amaranth plant can be used in its entirety, apart from the grain. The leaves can be eaten as a vegetable and the stem can serve as stubble or fodder for animals.

Amaranth has been used as a pole for the development of small communities where there is a shortage of water, because it is a short-cycle crop so that the land is worked and not left abandoned. Some farmers indicate that they use the seed as raw material for their agribusiness; Others comment that they have insurance in the market. It can be industrialized, modified starches, cosmetics, pharmaceuticals, edible oil, protein concentrates. Therefore each of these can be inserted in many of the important markets.

The potential of the Nopal is expanded by being able to be used in different varieties, as a vegetable for food; either in salads, soups, tortillas, juices or various dishes. In the same way, when industrialized, canned brine or pickled cans are obtained. Nopal waste can be used as an input for homemade composters that can be easily made. Small diameter holes are drilled throughout the jar to aerate its contents.

As a medicinal use, given the properties of the Nopal and its high fiber content, it is used as a natural hypoglycemic to control diabetes mellitus, helps control obesity and lowers cholesterol levels. There are also several reports on the use of Nopal leaves to relieve pain and cure inflammation (Sánchez 1982). It is a popular remedy to heal wounds, ulcers and gastritis.

It also has an industrial application for obtaining textile dyes, in the cosmetic industry it is used to make shampoos, facial creams, soap, cleansing creams, moisturizing creams, among other products.

The potential of the Nopal is expanded by being able to be used as fodder, reducing the pressure on natural grasslands. It is of worldwide importance, being used during times of drought as livestock feed, mainly in arid or semi-arid zones.

Conclusions

Given the shortage of some natural products such as natural gas and food, as well as new drugs due to the current pandemics, it has been necessary to make innovations in technologies to benefit society.

The 21st century engineer in Mexico must have a comprehensive world-class education with a broad perspective and vision of social, economic and environmental needs at the national and international levels.

In the last two years of the degree, select students according to their skills and abilities, promoting the integration of Work Groups, led by a Professor with industrial experience to create mini-industries and that some can dedicate themselves to innovative Technological Developments and others to the investigation. And thus undertake the feasibility and

development of a micro-enterprise with Appropriate Technologies using the raw materials of their region without affecting the environment and have a way of life that improves their socio-economic li

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