Strategy for the development of young researchers at the Instituto Tecnológico Superior at Fresnillo

Estrategia de desarrollo de jóvenes investigadores en el Instituto Tecnológico Superior de Fresnillo

José de Jesús Reyes Sánchez

Instituto Tecnológico Superior De Fresnillo. Méjico

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Abstract

The Instituto Tecnologico Superior de Fresnillo, is part of the National Technological Institute of Mexico (TECNM) in which its main objective is to train professionals in the area of engineering and technology. This project is a methodological proposal for the development of students who, through research, deal with technological development, generating strategies that encourage participation in innovation projects, congresses, and academic events where the skills that students develop during their training become noticeable. in the institute, in this way it seeks to direct the National program 1000 young people in Science of the TECNM whose motto is promoting young talent to quality postgraduate degrees. Where students manage to potentiate the research that is carried out in classrooms and take them to documents of a scientific dissemination nature,

Keywords: Higher Education, Applied Research and Science

Resumen

El Instituto Tecnológico Superior de Fresnillo forma parte del Tecnológico Nacional de México (TECNM) en el cual su principal objetivo es formar profesionistas en el área de ingeniería y tecnología. El presente proyecto es una propuesta metodológica para el desarrollo de estudiantes que mediante la investigación se ocupen del desarrollo tecnológico, generando estrategias que fomenten la participación en proyectos de innovación, congresos y eventos académicos donde se haga notorio las competencias que los estudiantes desarrollan durante su formación en el instituto, de esta manera se busca encaminar al programa Nacional 1000 jóvenes en la Ciencia del TECNM cuyo lema es impulsando a jóvenes talento a posgrados de calidad. Donde los estudiantes logren potencializar la investigación que se realiza en aulas y llevarlas a documentos de carácter de divulgación científica, generando banco de proyectos semestral – anual, que sean acordes al perfil académico, obtener fuentes de financiamiento, identificaciones de publicaciones idóneas para este fin, siendo el objetivo primordial que cada estudiante logre una publicación dentro de su carrera profesional.

Palabras clave: Educación Superior, Gestión, Desarrollo Tecnológico, Investigación aplicada y ciencia

Introduction

The TECNM is implementing the "Programa Nacional 1000 Jóvenes en la Ciencia", in order to contribute to the fulfillment of strategies of the 2013-2018 education sector plan on the formation of high-level human capital, it asks the directors of the technological ones to instruct Whoever it corresponds to detect the averages higher than 90 of the careers related in the ENERGY, AUTOMOTIVE, AGROINDUSTRIAL, ICT'S AND AERONAUTICS sectors in order to register them and link them with postgraduate courses of the Conacyt quality standard (2014 circular No. 14 TECNM) . Since 2008, the ITSF has had a Research and Postgraduate Department which is concerned with the development of student skills and in order to increase the indicators in the area of Scientific Research, which among its results are: published articles, degrees for: thesis, thesis with the industry, project as well as attending academic events such as congresses, innovation contests, entrepreneurship, etc.; It raises the need to implement strategies that lead to an increase in the interest of teachers and students in these issues. (Mexico, 2014).

Since 2008, the ITSF participates with students and teachers in the Scientific Summer Program, in which higher education and Scientific and Technological production are the most important instruments to achieve the social, economic, cultural and political transformation of a state. , region or country, Higher Education Institutions are strategic agencies for development, because they promote the existence of a culture based on communication and collaboration, committing resources and efforts in joint actions to meet specific interests of the regions. (Fresnillo, 2007)

The creation of a research club will be implemented in the institute that strengthens the education of the human being as the central axis in which all the training and organizational processes of the Technological Institutes revolve, in this club Science and Technology issues will be discussed, as well as such as the training of efficient personnel in applied, experimental and basic research capable of applying the scientific method and with the firm conviction of delivering professionals to society in the fullness of their potential.

For 2009, the National Autonomous University of Mexico (UNAM) proposed the creation of university groups to promote research in its faculties and institutions adhered to she considering the following objectives. (National Autonomous University of Mexico, 2009)

Promote interest in science in young people through theoretical-practical activities that allow them to know and start in the scientific

task.

Motivate students to strengthen their scientific career in the areas of these sciences and provide them with tools for optimal performance.

Establish an interrelation between what is taught in the classroom and what happens in the research laboratories of the related Centers and Institutes and Faculties.

Contribute to the dissemination of university science to promote a scientific culture.

Method Description

Measurement of results in actions related to scientific research.

An analysis of the statistics of research projects of both Teachers and Students in participation was carried out, it was found that teachers did not make publications and the writing of books was very scarce, in addition, the projects are mostly carried out by Teachers, this due to disinterest and contempt of activities and regulations in students.

The main tool is the generation of a research club in order to bring together outstanding students interested in their professional development, as well as the strengthening of the region's productive sector. Incentives will be used such as: release of: credits, social service, thesis generation, connection with the productive sector, sense of belonging to being part of a group, the satisfaction of having achievements through scientific research.

In the methodological aspect, "strategic planning" was implemented as theoretical support to support the objectives, presentation of proposals, establishment of actions and strategies and subsequent evaluation. (Chiavenato, 2011)

Developing

It began with the need to have a starting point, which reflects that the results in the research department are scarce, only some teachers and students give importance and seriousness to the application of the scientific method to solve environmental problems and participate in Linking with the company to identify and participate in the solution of situations inherent to the use of an adequate methodology for collecting information and implementation of tools that have already been used and published in order to use that knowledge in solving problems.

The activities of the Research Department begin in 2008, developing basic research projects by teachers, students have developed research proposals especially in the Industrial area with projects such as:

- Manufacture of material for the manufacturing laboratory of the Industrial Engineering career from recycled aluminum.
- Forge prototype project.
- Quality inspection in concrete mixtures.

- Self-directed groups in the industry.

In the electronics area:

- Investigation of fiber optic splices by adhesion.
- Characterization of maintenance activities and electronic analysis of Anfo Charger 440
- Documentary characterization of the logic of the MEC expert system installed in Minera Fresnillo

In the area of computer science and computer systems engineering, there is constant development of projects in the Software Development Center, establishinga close bondwith both the public and private sectors for the development and implementation of applied software.

As an Institutional strategy, the Meeting of Young Researchers is being carried out in collaboration with CONACYT, with the aim of stimulating the participation and development of research projects and the inter-institutional project collaboration.

Likewise, the strategy is the implementation of a research club in which the student feels comfortable sharing achievements, pleasant moments and belonging to a social sector benefited by generating and implementing knowledge, it will be possible to develop applied research at the Instituto Tecnologico Superior de Fresnillo.

A stage of senYesbilization with the ITSF Directorate, to raise awareness and request institutional support from the different departments involved, such as:Research, Linking, Planning, Complementary Activities, Educational Guidance, Communication and Dissemination, Coordinators of the corresponding careers Industrial Engineering, Business Management Engineering, Engineeringin Mining, Electronics Engineering, Logistics Engineering, Environmental Engineering, Computer Systems Engineering, Computer Engineering, Lic. in Architecture and the Academic area.

Derived from the previous analysis, it is notable that the Research Department takes emerging actions for the correct development of projects that, in addition to being solved, allow them to be published in articles with ISSN and ISBN registration, degrees by Thesis and release of social service and release of credits for activities. complementary to their training, the actions of the departments will be:

- Research. Looking for and assigning capable advisors for the different projects that arise from the exercise of the club, as well as resource management in order to provide the necessary resources either to attend to the projects, publish them and attend congresses.

- Research Professors: they will bethe Project Advisors will guide the students for the good

achievement of results in the implementation of thetoolsbased on the needs of the problem to be solved.

- Linkage: generating ties with the industries of the region to identify problems and are likely to apply the scientific method to solve the problem, in addition to generating participation commitment letters and scholarships for students. Release of social service.

- Extracurricular activities: considering and evaluating participation in academic events to release the relevant credits.

- Educational Guidance: Providing tools to students for the generation and acquisition of new knowledge.

- Communication and dissemination: Making known the achievements and results obtained from the club in the Updatetec magazine and ITSF pages

- Coordinators of the Different Careers: providing trades, supporting documents and links with companies.

- Academic Director and Deputy Director: They will be the main means of motivation for achievements with delivery of documents in recognition of achievements as well as economic contributions that help achieve the objectives.

- Quantitative variables: number of projects, number of participating students, number of events attended, number of publications.

- Qualitative variables: types of projects, students' careers.

Applied strategic planning is the preparation, development and implementation of the different operational plans by the organization, with the firm conviction of achieving objectives and goals set. These plans can be short, medium or long term. (Godet, 2007)

Types of strategic plans

Strategic plans can be short, medium or long term, depending on the magnitude of planning responds to the number of activities to be carried out by the various parts of the organization. It is essential that these plans, before being put into practice, are carefully analyzed and the goals to be achieved are adequately outlined. (Ansoff, 1993)

It is preponderant to consider that strategic planning does not try to make decisions looking at the future, but responding to certain problems of the present; It is not responsible for forecasting. It is then a set of functional plans in which a certain budget is invested and whose focus is on guiding the company in

a certain time, taking into account its resources and the environment in which it develops, in order to achieve the goals. planned.

Strategy Formulation: the identification of external threats and opportunities to the organization, the determination of internal strengths and weaknesses, the establishment of long-term objectives, the generation of alternative strategies, and the selection of specific strategies to be carried out. (Monteverde, 1992)

Implementation of Strategies: requires the company to establish annual objectives, project policies, motivate employees, and allocate resources so that the formulated strategies can be carried out; It includes the development of a culture that supports the strategies, the creation of an effective organizational structure, marketing, budgets, information systems and motivation to action. (Thompson, 1998)

Strategy Evaluation: where the internal and external factors underlying the current strategies should be reviewed; subsequently measure performance, and consequently propose strategies take corrective actions. All strategies are subject to change. (Menguzzato, 1991)

Types of benefits of strategic planning:

Financial Benefits

Research indicates that organizations that use planning concepts strategy are more profitable and successful than those that do not use them.

Generally, companies that have high returns reflect a more strategic orientation and long-term focus. (Porter, 1990)

Non-Financial Benefits

Greater understanding of external threats, a better understanding of competitors' strategies, increased employee productivity, less resistance to change, and a clearer understanding of the relationship between performance and results.

- Increases the ability to prevent problems.
- It allows the identification, prioritization, and use of opportunities.
- Provides an objective view of managerial problems.
- Allows more effective allocation of resources to identified opportunities.

The project is planned in 3 stages which must be cyclical in order to correct the errors that will arise in the development and implementation of the corresponding tools.

Stage 1. Analysis.

The number of companies in the region should be considered, as well as their businesses, carry out a detailed analysis of the needs of these companies

Sensitization sessions will be applied to teachers and students in order to make them aware of the importance of applied research, as well as the benefits to which they can obtain. See image 1a and 1b

Figure 1: Awareness sessions

Image 1a and 1b awareness sessions with students from the different careers on the importance of applied research generated from the scientific method.

Stage 2 implementation.

Planning will be done, generating lists of students interested in being part of the club

Form high-performance, multidisciplinary teams in order to ensure the expected results.

Analyze projects to be carried out and assign them to the teams that, through training, can obtain the most optimal results.

Hold fortnightly meetings in order to show projects and their progress in order to give an opinion and strengthen the tools used.

Generate links with companies to start a pilot test, identify problems, generate a project with its analysis, implementation and evaluation of results.

Ensure institutional benefits: credit release, social service, thesis writing, etc.

Search for means of scientific dissemination: publish articles, attend calls for conferences and academic events, write thesis...

Stage 3 Measurement.

Those interested should meet monthly to discuss the achievements obtained, make the necessary adjustments and continue contributing to the growth and contributions of the research club.

The proposed strategies will be implemented from the January-June 2015 semester with well-established goals that allow measuring results,

Final comments

Summary of Results

In this work that is in the process of implementation. The goal of this project is the methodological proposal for the motivation and encouragement of students in scientific research, so that the results will be measured in the number of research projects, calls attended, articles published and thesis degrees, of which up to now there was no noticeable turnout.

In addition to generating an information bank of projects, congresses, symposiums, magazines and books where the products generated in the different ITSF careers could be published

Young people interested in entering PNPC postgraduate courses will be contributed.

Conclusions

Students will have a space to generate scientific knowledge by applying the scientific method generating applied research.

The participation of ITSF students in academic events (innovation contests, congresses) will be increased.

Students and advisers will make publications in congresses with reports with ISSN and ISBN registration.

Recommendations

Researchers interested in continuing our research should wait for the results of this work, analyze the strategies implemented and rethink the factors to identify which ones would be more are influencing the rate of applied research projects.

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José de Jesús Reyes Sánchez se desempeña como Docente Investigador en Ingeniería en Gestión Empresarial del Instituto Tecnológico Superior De Fresnillo: Fresnillo, Zacatecas, MX. Es Lic. en Psicología por Universidad Autónoma De Zacatecas: Zacatecas, Zacatecas, MX

Correo electrónico: profejesusreyes@yahoo.com.mx

José de Jesús Reyes Sánchez

https://orcid.org/0000-0002-3866-2363