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Abstract

September 2011, the Coordination of Research and Graduate Programs starts working in the Instituto Tecnológico Superior del Sur de Guanajuato (ITSUR), its purpose was to establish a central organism for research in order to foment, plan and trace the research projects. Considering that research involves the use of the available knowledge with the purpose of generate new knowledge to define application lines that allow humanity problem solving and taking this results to the production, modification and technologic transfer that allows rise the quality of life in society, in the year 2012 was created the first Academic Group of the institution registered against PRODEP and opens the doors to visualize the creation of new Academic Groups. In 2014, the Academic Group denominated "Tecnologías de información" was created and this article offer a short history, motivation and research projects done until this days.

Academic Corps, Research, Prodep, Technology Institute

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Introduction

The Research and Graduate Coordination of the Higher Technological Institute of the South of Guanajuato (ITSUR), began work in September 2010 as a central body for research within the institution as an unprecedented event. Prior to this event the research at ITSUR had never attempted to conduct research in an official, formal and structured manner. The research projects lacked planning and follow-up, they were never even registered to the corresponding instances of the Ministry of Public Education (SEP), ITSUR was far from being an institution with formal research projects.

Following the effort made during 2010 and 2011 to train a group of teachers interested in carrying out the not so simple work of the teacher-researcher and after several efforts to execute official and registered research projects within the institution that managed to show impact in The environment, collegial work as an unregistered Academic Body (CA) finally bears fruit in 2012, achieving the recognition as CA with status "in formation" before the PRODEP instance.

From 2012 to 2014, 5 research projects are carried out individually and collegiate and 1 research projects as integrated CA, making a total of 6 research projects among the 6 full-time professors members of the CA Called "Technological Innovation" and 6 collaborating professors, who initially worked with two Knowledge Generation and Application Lines (LGAC), on the one hand, with the 3 professors members of the CA corresponding to the courses of Computer Systems Engineering and Computer Engineering.

With the line: Information Technologies, and on the other hand with the 3 professors members of the CA of the career of Engineering in Electronics with the line: Automation and Control as mentioned in (Martínez López, Estrada Rojo, Gutiérrez Torres, Ortega Alejos, Vega Chávez, 2016), from which projects 2014 to 2016 should be omitted as part of this CA for the following reasons.

During the period of existence the CA of Technological Innovation it is possible for the institution to visualize a better distribution of the structure of the CA, considering the increasingly evident close relationship between the 3 members of the courses of Engineering in Computer Science and Engineering in Systems and The increasingly wide separation of the collegiate projects in which they participated distancing them little by little from the work done by the 3 members of the Electronic Engineering career.

Considering that both the professors of the Electronic Engineering area and the professors in the area of Computer Engineering and Computing Systems had professors with a desirable PRODEP profile, the possibility of separating the CA from Technological Innovation to Favoring the creation of 2 academic bodies with the capacity to deepen the LGACs related to the careers in which the professors were attached, considering that in this way it would still be possible to establish collaboration between these two new CAs in case it is considered relevant for some project .

It is then that from 2014 we begin to work immediately under this new structural proposal, without neglecting the collaborative work that was still in force in the CA of Technological Innovation.

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Methodology

Once the aspirations for the formation of new academic bodies are projected, continuing with the rhythm of work in the realization of projects, from the year 2014 begin semester meetings between the 3 professors still members of the CA of Technological Innovation, in force in That time, corresponding to the courses of Engineering in Computer Systems and Computer Engineering together with 4 other collaborating professors interested in developing the LGAC corresponding to the area of Information Technologies (IT).

While the Technological Innovation CA continued its course, these 7 IT career teachers began to outline their projects and collaborations in a strategic way, planning that the 7 teachers could take part in projects registered starting in 2014, focusing on such projects and Participations in a much more IT-oriented LGAC. This allowed this group of teachers, during the period 2014 to 2016, to generate a portfolio of 7 Research Projects registered in the ITSUR being 2 of these also registered before corresponding instances of the SEP as formal Research Projects.

During the semiannual meetings held in the period 2014-2016, it was possible to strategically plan the participation of each of the 7 teachers in the various projects registered (in charge of the professors members of the AC) and unregistered (in charge of the collaborating professors) , In addition to agree on several occasions the possibility of sharing the experiences lived in such projects in various articles written for publication in congresses and academic and scientific journals, as well as the possibility of registering intellectual property of some developed products, so that everything This could strengthen the record of evidence that could serve when requesting the creation of a new CA.

The registered research projects, developed during the period 2014-2016 consider topics such as:

1. Automated Structured Query Language Assessment (SQLJudge),
2. Management of groups and contests in SQLJUDGE,
3. Evaluation of the impact of a fabric scheduling tool through simulation and load balancing in the production process in textile companies of southern Guanajuato,
4. Evaluation of the Impact of a tool to monitor and generate statistics of the production process of the textile industry of Moroleón, Gto.,
5. Production programming in textile projects using planning and balancing software in textile companies in the south of Guanajuato,
6. Impact of software tools to support the ITSUR Student Follow-up,
7. Assessment of the risk factors to establish the profile of the Upper Level student by implementing the Bayesian networks in a software tool.

Projects not formally registered as research projects, developed in support of collaborating professors during the period 2014-2016, considered topics such as:

1. Integral School Control System a Web module for issuing chips,
2. Comprehensive School Control System a module for applying psychometric tests,
3. Comprehensive School Control System a module for application of vocational test,
4. Teaching Evaluation System, appropriate version for ITSUR,
5. Programming competitions in the academic environment.

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Results

In summary, the collaboration of this group of 7 teachers to form new academic bodies resulted in a total of 12 projects developed in a period of 2 years, in addition to at least 12 articles of dissemination placed in various congresses and magazines as Can be seen in Table 1.

Title	Magazine / Congress	Reference
Teachers and students immersed in the implementation of an international model of software processes.	National Congress of the National Association of Faculties and Schools of Engineering ANFEI 2014	(Morales Orozco, Gutierrez Torres, & Martínez López, 2014)
Automatic Code Judge, a tool to improve programming skills	Faculties and Schools of Engineering ANFEI 2015	(Morales Orozco, Gutierres Torres, & Vega, Automatic Code Judge, a tool to improve programming skills, 2015)
Impact of software for scheduling fabric through balanced job allocation	Virtual International Congress of Innovation, Technology and Education CIVITEC 2014	(Martínez López, Gutiérrez Torres, & Vega Flores, Impact of software for fabric scheduling through balanced work allocation, 2014)
Building a software for scheduling fabric by means of balanced work assignment in ...	Journal of Programming, Mathematics and Software PROGMAT 2015	(Martinez López, Vega Flores, Gutiérres Torres, & Morales Orozco, 2015)
An IT tool for Textile Production Planning and Tracking, Tissue planning module	International Congress Academy Journals 2015	(Martínez López, Gutiérres Torres, Morales Orozco, & Vega Flores, 2015)
Implementation of the Planning Module in the Tissue Area of an Integral Tool for Textile Production Planning	Virtual International Congress of Innovation, Technology and Education CIVITEC 2015	(Martínez López, Gutiérrez Torres, & Barron, Implementation of the Planning Module in the Tissue Area of an Integral Tool for Textile Production Planning, 2015)
Process and Institutional Impact of the CMMI-DEV L3 accreditation from the Software Development Center	National Congress of the National Association of Faculties and Schools of Engineering ANFEI 2015	(Martínez López, Vega Olvera, & Morales Orozco, Institutional Process and Impact of the CMMI-DEV L3 accreditation from the Software Development Center, 2015)

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Comprehensive school control system; Inclusive project for quality vocational training	National Congress of the National Association of Faculties and Schools of Engineering ANFEI 2015	(Vega Olvera, Martínez López, & Alcantar Ortíz, 2015)
Automated monitoring of the production process of the textile industry	International Congress Academy Journals 2014	(Gutiérrez Torres, Martínez López, Morales Orozco, & Vega Flores, 2014)
Programming competitions as a trigger for learning	National Congress of the National Association of Faculties and Schools of Engineering ANFEI 2014	(Gutiérrez Torres, Morales Orozco, & Martínez López, Programming competitions as a trigger for learning, 2014)
System of evaluations of SQL queries tests and automatic feedbacks	International Congress Academy Journals 2015	(Gutiérrez Torres L., Martínez López, Vega Flores, & Morales Orozco, 2015)
Automated database query and evaluation	Interdisciplinary Congress of Academic Bodies CICA 2015	(Gutierrez Torres, Morales Orozco, Martínez López, & Arroyo, 2015)

Table 1 Table of publications in articles and congresses period 2014-2015

It is also possible to count the corresponding elaboration of software prototypes corresponding to the projects that already have the registration or the process of the same before the National Institute of Copyright (INDAUTOR), of the following:

1. SQLJudge (Automated SQL Query System)
2. RISK CONDUCT DETECTION SYSTEM (SDCR V1)
1. 3. Simulator for balanced allocation in machines by production bl1qocks
3. ITSUR Teaching Evaluation System

It is important to mention that the 4 collaborating professors involved in these projects, having participated in projects since 2012 obtained their recognition of PRODEP's Desirable Profile, which encouraged that with this set of evidences, the 7 teachers related to the IT area, during the For the registration of new CAs before PRODEP by 2016, proceeded to promote the formation not only of one but two new academic bodies, one oriented to the application of IT in society (company, education, government) and another focused on The best practices of Engineering within the processes of software development, causing with this the imminent disintegration of the CA of "Technological Innovation" in favor of the aforementioned benefits, releasing in a collateral way the members corresponding to the area of Electronic Engineering allowing them to conform By themselves their own CA.

Conclusions

The conformation of Academic Bodies is not a trivial task, the needs of the context dictate to a great extent the behavior of the same, the preferences of the participating teachers, their passions, their interests.

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At this level of evolution in the ITSUR we can consider that ideally the size of a CA should consider 3 members with similar interests but different motivations, which allow them to establish individual projects that allow collaboration between the members of the same CA but conserving Collaboration between different Academic Bodies that can strengthen the development of the same course towards the consolidation.

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