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Educational Planning and Social Responsibility: Eleven Years of Mega Planning at the Sonora Institute of Technology (ITSON)

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ABSTRACT

The Instituto Tecnológico de Sonora (ITSON), a public and autonomous university in Ciudad Obregon, Sonora in Mexico has, since its inception, maintained a commitment to society and public service. To transform this commitment into valued results, it has used Mega Planning as its framework over the last eleven years. This article illustrates the impact an educational institution can have through a strategic planning and implementation approach that is focused on measurable objectives, the

appropriate processes and activities, and the required resources for the development of its region (i.e., students and their environment). The article will begin with a brief background of the institution, its strategic approach, the subsequent curriculum and organization reform, and finally four key strategic programs that have had a positive social impact in the region: The Integrated Community Development Program; ITSON-Consulting; Masters in Agribusiness; and the Software Factory.

Background

ITSON was originally established as a high school in 1955 and quickly matured, offering all its programs and courses at a university level by 1974, and finally becoming formally recognized as a decentralized, public and autonomous university in 1976 with the support of the federal and state government. Since its establishment, it has concerned itself with maintaining its commitment to society and public service, perhaps explaining its quick growth and diversification of the services it offers. It has grown from 2,000 students in 1980, to 6,000 students in 1990, to

16,100 students in 2004. In spite of its accelerated growth, the average cost per student is the third lowest among the public autonomous universities in the country. ITSON's major strength has been its ability to clearly define its priorities and use them as the main criteria for the allocation of its resources.

Strategic Focus

Recent years, in particular, have seen an increase in the pressure for professional educators and administrators to make decisions based on data-driven results and consequences (Kaufman, Watkins, & Guerra,

2002). ITSON's application of Mega Planning (Kaufman, 2000) was born out of its desire to add measurable value to its students, the academic community, and society and is based on the notion that people have the desire and capacity to act for the benefit of the group. Rather than an altruistic act, this is actually a pragmatic perspective that sees the accomplishments of each individual as an integral fiber of a thriving environment.

The collective contributions of each individual toward common goals give those individuals a higher likelihood of success than would individual accomplishments exclusively focused on individual goals. The latter is a zero-sum game, where the amount of "winnable goods" is fixed. Whatever is gained by one entity, is therefore lost by another (Heylighen, 1993). While many of us have heard that this is simply the way the world works, there is another approach. We can choose to play a non-zero sum game, where the solutions and strategies of all players are consistent with one another. In this sense, working towards common success (economical, social, health, etc.), also ensures the best individual results (Nash, 1950). In this cooperative situation there are no losers, and educational institutions can play a key role in properly orienting and preparing individuals for long term shared success.

The challenges for the administration are twofold: strategic and operational. Balancing the two is a challenge in and of itself. The strategic level, institutional actions are geared towards the cultural, social, ecological and economic areas. In the cultural arena, ITSON has created the Integrated Community Development

Program; in the social sphere there is the ITSON-Consulting; in ecological, the Masters in Agribusiness; and in the economical domain, the Software Factory. These initiatives all were designed to align with the ITSON commitment to Mega/Societal results and consequences.

The results of these strategic initiatives allow ITSON to offer its students an environment conducive for skills mastery in areas of great value, as well as the opportunity to challenge their knowledge and assumptions with authentic performance settings and real life problems. While many have asserted that producing transfer is the main job of education, there has been an emphasis on activities that result in students "knowing" how to do something, but fail at enabling them to apply the relevant skills when confronted with real problems (Lebow & Wager, 1994).

Curriculum and Organization Reform

Since the early 1990s, ITSON has been laying the groundwork to meet today's challenges, particularly in terms of the philosophy and paradigms of its administration, faculty and staff. Consequently, in 1991, a key document, titled *The Value of the ITSON Model*, was published. In this document, ITSON's members summarized and aligned their thoughts with a high value toward theoretical application, service, quality, and continuous improvement. In this context, a curriculum reform was proposed.

The formal reform process began in 1993 and was based on Roger Kaufman's proposed model in *Mapping Educational Success* (1992), where objectives and strategies were

derived from social impact indicators, and all aspects of the institution were to be aligned accordingly. The following are some of the relevant characteristics of ITSON:

- ITSON targets its actions and services toward valuable results for its students, employers and society
- ITSON embarks on strategic projects that support sustained development of the state and country
- ITSON provides quality services by retaining leaders and targeting excellence
- ITSON evaluates performance by tracking progress towards the resolution of real life problems and capitalization of opportunities
- ITSON continuously improves by making modifications and adjustments based on the attainment of its vision and mission

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1. *Planning*: The design involved periods of reflection, raising awareness, education, redimensioning,

structuring, evaluation and negotiation (1991-1995)

2. *Implementation*: Evaluation of milestones and en-route results; Formative evaluation, Improvement recommendations; and Adjustments (1995-2001)

3. *Evaluation of Curricular Results*: Selection of area to promote toward levels of excellence in terms of social impact; Redesign (2002-2008)

4. *Evaluation of Social Impact*: Globalization of educational programs; consolidation of institutional alignment; Continuous improvement (2009-2015)

5. *Evaluation*: Innovation; Leadership through the integration and articulation of educational programs with economic and social organizations that support the sustainable development of the region (2015 forward)

Successful Projects and Social Impact

Having successfully concluded the evaluation of the curriculum model in 1995, in 2002 ITSON began to align this model with the key professional competencies its graduates were expected to apply on the job. This alignment manifested itself through various strategic programs: the Integrated Community Development Program; the ITSON-Consulting; the Masters in Agribusiness; and the Software Factory.

The Integrated Community Development Program

Of the 2.3 million inhabitants in the state of Sonora, 42% of them live in the south. In this region, the economic activity traditionally sustained by agriculture, cattle ranching, fishing, and mining has suffered, and consequently, has led to unemployment, vandalism, disorganization, drug addiction among its youth, emigration, as well as a lack of food supply, medical care, public safety, technology, and lastly a significant education drop out rate.

In this context, ITSON began supporting the development of marginalized communities in 2003. To date, six local cities have been integrated into the program, with the fundamental belief that given the right strategy and alliances with local governments, it is possible to resolve the problems that these communities face.

Between April of 2003 and July of 2004, ITSON tended to 50 rural communities, benefiting 5000 people with the support of 40 organizations (approximately 8 government, 10 social, and 20 educational organizations), the participation of 140 students from 14 different undergraduate programs, and 30 professors from 10 academic areas, who together developed 48 community development projects.

The program is projected to last approximately eight years, and is divided into five phases: raising awareness, organization, implementation, consolidation, and tracking. For the first stage, the intervention methodology was further subdivided into nine stages: planning and needs assessment, solution (project) selection, education and training, resource management, program implementa-

tion, formative evaluation, monitoring and tracking, and summative evaluation.

The specific projects that were selected and developed for the public awareness stage are classified into: 14 in Educational Support; 12 in Health; 8 in Arts, Culture, and Sports; 6 in Economic Development; 4 in Infrastructure Assessment and Maintenance; and 4 in Technology Use.

Impact

ITSON was able to involve the community in the development of the project as well as delegate the responsibility for identifying improvement opportunities to the community. The results of the program served as the basis for defining with precision the priority areas requiring immediate attention, and the best way to align ITSON's degree programs. The involvement of academics in this project also produced research studies, which laid the foundation for models of community development and the enrichment of the learning and teaching experience. Lastly, the participation of students, allowed them to expand and share their knowledge, as well as contrast and integrate theory with practice.

The ITSON-Consulting Project

Since the 1980s, Mexico has been opening its economy, allowing exports to increase its contribution to the gross national product by 30%, placing Mexico as one of the top economies of the world. In this context, over the last twenty years, the Maquiladora industry in the State of Sonora has had an accelerated growth, accounting for three fourths of all jobs in the state, while local com-

panies, which depend on the primary sector have either gone bankrupt or are barely surviving.

With the goal of offering integrated advice to strengthen small and medium businesses so that they can remain competitive as well as form certified consultants in local standards, the Consult program was launched in 2002, in coordination with the Department of Economy. As of 2003, this program was under the sole management of ITSON, and later became known as ITSON-Consulting.

Over the last two program campaigns, 103 companies have been assisted, 173 consultants have been trained, 80 of which have attained certification. Between August 2004 and February of 2005, 49 companies from eight communities have been supported. The ITSON-Consulting program development was composed of five phases: identification of opportunities, strategic planning, project implementation, tracking and consolidation. The first phase was further subdivided into five stages: planning and organization, a theoretical and modeling stage, a practical stage, tracking of results, and continuous improvement.

The areas of application included Market Research (sales, consumer and provider surveys), Production (operational planning, business distribution and inventory administration), Administration (leadership and information systems), Human

Resources (personnel inventory, and work climate), Finance (cost assessment, expenses, assessment of financial situation and effective management), Quality and Ethics (systematization of processes, transparency and disclosure), and finally Culture.

Impact

Opportunities for improvement were identified and numerous proposals for an increase of the production efficiency of companies have been recommended. This program has also allowed a close alignment between the university and the production sector, which in turn has resulted in a wide range of opportunities for collaboration. The program has also allowed

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faculty to identify existing problems and opportunities as a foundation for research and development. Lastly, it has offered students the opportunity to work on real business scenarios, attain certification, earn a degree, and contribute to the strengthening of regional industry.

Masters in Agribusiness Administration

In 1998, a strategic planning workshop led by George Seperich, Professor and Associate Dean at the Morrison School of Agribusiness and Resource Management, Arizona State University was offered to representatives of the agricultural sector, at which time the following vision was defined:

The producers in Valle del Yaqui are in the business of economic development, employment creation, and preservation of natural resources. To reach such development, we require maximum production efficiency in key areas, including: agri-industrial, economic-financial, market and commercialization, administrative and research and development.

Using this vision as a foundation, many efforts were made to train and develop farmers, eventually followed by a Masters in Agribusiness beginning in 2003, in cooperation with Arizona State University-East.

Program Objectives

The overarching goal of the program is to form experts in agribusiness, who, through the application of strategic planning methodologies, contribute positively to the economic and technological development of the areas of agriculture and cattle.

The management strategy of the program has been to begin with a research plan clearly defined and based on problems that the regional agriculture, cattle and aquiculture sectors face. The program began in 2003, with 13 projects (8 with public funding and 5 with private funding), 20 students, and 8 faculty members.

The program is based on the following notions:

- *Learn by doing:* Students and faculty work with a real client who is looking to develop a business plan, thereby applying theory into practice while facing real deadlines and expectations.
- *Funding Center:* Clients are not only mentors, but also fund these projects by providing materials

and equipment necessary to conduct the projects.

- *Academic Responsibility:* Each project has two key deliverables: the case study, to share findings within and outside the university; and the business plan, which is an objective and detailed response that focuses on the issues specific to a given product.
- *New Academic Paradigm:* Students and faculty share the learning experience. In this paradigm, research is conducted cooperatively among producers, students and faculty. The comfort zone is reached only once the project has been successfully completed.

Impact

The impact of this program includes: A new learning paradigm has been fully adopted; The community is involved and benefiting financially; The student has greater opportunity to contribute to the solution of real problems in real time; Faculty facilitates learning through applied research; The university has become a key contributor to the regional development of the agricultural sector, while taking a step further towards international recognition.

Software Factory

One of the central goals of ITSON's development plan has to do with the economic improvement of the region's organization. To reach this goal, ITSON has set out to develop the intellectual capital of the region, and thus, the Software Factory was launched in 2004.

To support the development of intellectual capital, ITSON has created anchoring companies; integrated centers of innovation and develop-

ment; has supported the integration of productive clusters and chains; and developed information and diffusion systems.

Objectives of the Software Factory

The overarching goal of the factory is to be a key agent in the economical transformation of production activities within the region, the State, and the country, by providing incubation of technology-based business and allowing the creation of production chains. To this end, the Software Factory's function is to maximize the production of business solutions based on software, using solid, efficient, replicable, and quality methods of production. Further, it seeks to take advantage of the existing technology, while optimizing the life cycle of software and incorporating quality assurance mechanisms.

Working under international quality and technology standards, the Software Factory offers organizations the capacity to meet the ever-growing demand for products and services. It also enables organizations to function efficiently, effectively, and flexibly in delivering valued solutions, while reducing fixed costs, thereby making them more competitive.

In order to offer the right service to clients, the Software Factory begins with a needs assessment, after which time, it is determined whether the solution is to develop customized systems, acquire off-the-shelf products, or support the maintenance of existing systems. Some of the initial projects of the Software Factory have included:

For ITSON: Internet support systems for education; Knowledge Management; Centers for Strategic, Tactical, and Operational Informa-

tion; Support in the accreditation of educational programs; Management of student tutoring; Alumni tracking; Virtual Window for student, faculty, and staff services; Library System.

Regional and national organization clients include: Reto Telecommunications of Mexico, public safety; State Government of Sonora, Personnel; Municipal Government, Catastro, OOMAPASC, Receipt Distribution; and CACSA, Unit Prices Control.

Impact

One of the key impacts of the Software Factory has been the growth in research, and the alignment between Software Engineering, administration, and production systems. The factory has also enabled the continuous update of educational programs across a wide range of disciplines at ITSON. Lastly, it has provided services to regional, national, and international organizations, which has directly contributed to an increase in jobs for graduates, as well as funding for ITSON.

Evaluation and Continuous Improvement

As ITSON continues to uphold its commitment to measurably improve its region, it will be critical to evaluate what is working and what is not. To facilitate this process, an initial list of measurable indicators, based on Kaufman's Organizational Elements Model (2000), has been derived and will be used as a foundation from which to identify what organizational results are being met, where the biggest gaps lie, what areas require revising and alternate approaches, and a number of other issues related to the continuous improvement of ITSON and its region. Table 1 sum-

Table 1
OEM Indicators for ITSON

OEM Level	Result	Some Indicators
	Self-Sufficiency/ • Self-Reliance/ • Quality of Life (QOL) • Continued Employment at C < P level	<ul style="list-style-type: none"> • Optimal Employment (i.e. graduate working in the field for which he/she studied)—within 6 months of graduation • Earned Income trend over a seven-year period • Employer Satisfaction Index • Continued employment <ul style="list-style-type: none"> – Local – Out of town – Income Trend (slope) • Sub-employment <p>All further analyzed according to:</p> <ul style="list-style-type: none"> – Gender – Age – Social/Economic Class – Father's occupation – Parents' education – Marital Status – Single Parent – Divorced – Disease, health
Macro	Graduation	<ul style="list-style-type: none"> • Graduation rate • Number of drop-outs (first year deserters) <ul style="list-style-type: none"> – Number of drop-outs who are making same or more than when they started • Number of Non-completers (complete first 2 years) <ul style="list-style-type: none"> – Number of non-completers who are making same or more than when the started • Number of years for completion
Micro	Program Completion Course Completion	<ul style="list-style-type: none"> • Completion rate per program • Drop-out rate per program • Completion rate per course • Drop-out rate per course

marizes top-level indicators. These indicators have already been used to guide what results ITSON faculty and administrators are responsible for delivering at their operational levels, which in turn provide the basic criteria for resource allocation, best

methods and activities selection, and important decisions they face in their work and every day lives.

Conclusion

Using Mega Planning as a reference point has enabled ITSON to use

an ambitious framework, which in turn made possible a comprehensive educational proposition that aligned an integrated education for students with the sustained development of the region. This was achieved by increasing the societal relevance of IT-SON's programs, aligning strategic, tactical and operational objectives, making the efficient use of resources transparent, and securing external investment to support research, innovation, and development.

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