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The works must be unpublished and refer to topics of political, science-economics-public, policy-economic, development-technology, innovation and other topics related to Social Sciences.

Presentation of the Content

In the first article we present, *The importance of sustainability, in libraries in Villahermosa Tabasco, for the design of a proposal*, by MOREJON-SANCHEZ, Juana María, ELISEO-DANTÉS, Hortensia, CABRERA-MORALES, Janet and PAYRÓ-GARCÍA, Génesis, with adscription in the Instituto Tecnológico de Villahermosa, as the next article we present, *Geosites of interest as a geopheritage of Jalisco, Mexico. Progress*, by MACIEL-FLORES, Roberto, ROSAS-ELGUERA, José, PEÑA-GARCÍA, Laura and ROBLES-MURGUÍA, Celia, as the next article we present, *Heat Islands in the city of San Francisco de Campeche: Detection and solution*, by CANUL-TURRIZA, Román Alejandro, BARRERA-LAO, Francisco Javier and ALDANA-NARVÁEZ, Gabriela Patricia, with adscription in the Universidad Autónoma de Campeche, as the last article we present, *Strategies to promote the Inclusion of People with Visual Disabilities in the Technological Institute of Villahermosa*, by OLÁN-SÁNCHEZ, María Dolores, LOPEZ-VALDIVIESO, Leticia, MARTÍNEZ-VICHEL, Guadalupe and PRIEGO-GÓMEZ, María Candelaria, with adscription in the Instituto Tecnológico de Villahermosa.

Content

Article **ECORFAN Journal-Republic of Paraguay**
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The importance of sustainability, in libraries in Villahermosa Tabasco, for the design of a proposal

La importancia de la Sustentabilidad, en las bibliotecas en Villahermosa Tabasco, para el diseño de una propuesta

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Abstract

Objective. Analyze the Sustainability in the libraries, throught applied research, in Villahermosa City, Capital of the Tabasco State. Methodology. The research is non-experimental, descriptive and correlational. In this research, the sustainability of libraries is analyzed considering the behavior of the research variable (Sustainability) in the different international, national and local contexts, as well as the theoretical foundations, on which this research variable is based. Then an instrument is designed that was applied to the libraries of the city of Villahermosa, for the collection of information through the Self-diagnosis tool based on ten elements (Measurements related to the end user, Measurements and / or performance of the process, Alliances with providers, Documentación, Training, Benchmarking, Adaptability Process, Cotinuous improvement, Human resource evaluation, Management level evaluation), which generated results on the current situation of the libraries, which served as a basis for their analysis. Contribution. From the results obtained in the application of this instrument, a model was designed to improve the sustainability of libraries, which will allow them to be more competitive in their field.

Sustainability, library, variable

Resumen

Objetivo: Analizar la Sustentabilidad en las bibliotecas, a través de una investigación aplicada, en la ciudad de Villahermosa Tabasco. Metodología. La investigación es no experimental, descriptiva y correlacional. En la presente investigación se analiza la sustentabilidad de las bibliotecas, considerando el comportamiento de la variable de investigación (Sustentabilidad) en los diferentes contextos internacional, nacional y local así los fundamentos teóricos, en los cuales se sustenta esta variable de investigación. Luego se diseña un instrumento que se aplicó a las bibliotecas de la ciudad de Villahermosa, para el levantamiento de la información a través de la herramienta de Autodiagnóstico basado en diez elementos (Mediciones relacionadas con el usuario final, Mediciones y/o desempeño del proceso, Alianzas con proveedores, Documentación, Entrenamiento, Benchmarking, Adaptabilidad del proceso, Mejoramiento continúo, Evaluación del recurso humano, Evaluación del nivel directivo), el cual generó resultados sobre la situación actual de las bibliotecas, lo que sirvió como base para el análisis de las mismas. Contribución. De los resultados obtenidos en la aplicación de este instrumento, se diseñó un modelo para mejorar la sustentabilidad de las bibliotecas, el cual les permitirá ser más competitivas en su ámbito.

Sustentabilidad, biblioteca, variable

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Introduction

Sustainable development does not debate or discuss political or economic systems, but rather, based on the environment, it postulates a peaceful and gradual social change, which in an organized and planned manner modifies our relationship with nature, with ourselves and with society. In this way, sustainable development has created a great adhesion in its favor because in its discourse it offers central points of consensus that are impossible to reject; however, this is due to a very simple reason: analysis is needed so that the definition is not too broad to be put into practice. The concept is accepted as a social proposal but cannot be easily applied to specific work processes; however, it is its breadth that allows for multiple interpretations regarding sustainability. (IICEMAD-IPN 2003),

The objective of this project is to determine the importance of libraries in Villahermosa Tabasco. Therefore, it is important to consider the different contexts: international and national. As well as the theoretical foundations on which the research variable (Sustainability. Next, the methodology of the investigation is presented, where an instrument for the information survey is designed. Then the results of the research are presented, which will serve as a basis for a proposal, and finally the conclusions of the project are presented.

Background

The National Public Library Network began in 1983 as one of the central strategies in education and culture promoted by the Mexican government. At that time, Mexico had 351 public libraries throughout its territory, limited for its surrounding population, so it was thought to start a network in each of the states, which in turn was coordinated with a central library in the main cities, with regional libraries in the middle cities and with municipal libraries in small towns. Thus, in 1988, with the formation of the National Council for Culture and the Arts (CONACULTA), the General Directorate of Libraries became part of its structure, and with it, a program for the creation and maintenance of new library spaces was promoted, promoting various actions to solve the country's educational needs.

The Public Libraries of the City of Villahermosa, Tabasco. They generated a determined change from the emergence of the José María Pino Suárez Library, which established some other services not available in those years.

Problem Statement

Currently, both public and private libraries in Villahermosa Tabasco, do not have automated systems in relation to the organization of their books, have a collection of obsolete books, computer equipment that is not continuously updated, poorly trained staff who really do not know their work as a librarian, deficiency in public service. Therefore, it is necessary to study the importance of sustainability in the libraries in Villahermosa Tabasco.

International Context

Within the framework of the United Nations High Level Policy Forum (HLPF), which is taking place in New York, the International Federation of Library Associations and Institutions (IFLA), ratified its position regarding the importance of libraries in meeting the United Nations Sustainable Development Goals (SDAs). The role of libraries is key to this issue and as the president of IFLA expressed, "In recent years, IFLA has placed a strong emphasis on the United Nations Sustainable Development Goals. These not only provide a valuable way to raise awareness and advocate for libraries as partners for governments, but also provide a framework for thinking about how libraries can meet broader social priorities. The representatives of the countries of the UN highlight the great work being done at the national level to ensure that libraries are recognized and included in development and implementation plans.

In September 2015, United Nations Member States adopted the document "Transforming our world: the Agenda 2030 for Sustainable Development" (United Nations Agenda 2030). The new UN Agenda 2030 is an inclusive framework, consisting of 17 Sustainable Development Goals (SDGs) covering economic, environmental, and social development. Through the achievement of the objectives of this agenda, no one will be left behind. Libraries are key institutions for achieving these Goals.

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Worldwide, 320,000 public libraries and more than one million parliamentary, national, university, scientific and research, school and special libraries ensure that the information and knowledge to use this information is available to all, making them key institutions in the digital age. Libraries provide infrastructure for information and communication technologies (ICT), help people develop the ability to use information effectively, and preserve information to ensure continued access for future generations. They provide a reliable and established network of local institutions that can reach all sectors of the population.

National Context

The Miguel Lerdo de Tejada Library is a bibliographic site in Mexico City, located in the Historic Center of Mexico City. It is specialized in economic topics and is under the protection of Mexico's Ministry of Finance and Public Credit at the Antiguo Oratorio de San Felipe Neri. It has a bibliographic collection of 86,350 titles and 114,852 volumes.

With the goal of stimulating the study and documentation of economic sciences in Mexico, in 1928 the then Secretary of Finance Luis Montes de Oca commissioned Jesús Silva-Herzog, then in charge of the Historical Archive of the Treasury, and bibliographer Francisco Gamoneda, to concentrate the different collections related to the economy in Mexico's history, such as the Real Hacienda of the 18th century and the Public Treasury of the 19th century from independent Mexico.

The site chosen for the new collection was the Empress Chapel of Palacio Nacional, where Gamoneda ordered a carved wooden shelf similar to the Escorial Library in Spain. The library was opened to the public in October 1928. In 1957, on the occasion of the centenary of the Reform Laws, it was named after Miguel Lerdo de Tejada, in homage to the man who occupied the position of public treasurer during the presidencies of Ignacio Comonfort and Benito Juárez. Given the library's growing collection, in 1970 it was moved to the main nave of the former Oratorio de San Felipe Neri "El Nuevo", on República de El Salvador Street, where it remains to this day.

The newspaper collection includes diverse newspapers and magazines, which are integrated to diverse collections and temporalities, ranging from the newspapers and magazines of the Reserved Fund of the 19th and 20th centuries, to contemporary periodical publications, such as the newspapers La Jornada, Milenio, Revista Proceso, Artes de México, to name a few.

Theoretical Foundations

Sustainability

According to Juarez. 2011, Sustainability is the continuous improvement that allows to satisfy the current needs without compromising the capacity of future generations to satisfy their own. Suárez, 2014, defines sustainability as an individual way of life that starts in a particular way until arriving in a general way to sustainable development as the development that satisfies the needs of the present without compromising the capacity of future generations to satisfy their own needs. Sustainability is actually "a process" that aims to find a balance between the environment and the use of natural resources. (Group, 2013). Sustainable development refers to the ability of the human system to meet the needs of present generations without compromising the resources and opportunities for growth and development of future generations. According to Méndez 2014, sustainability is the ability to achieve sustained economic prosperity over time while protecting the planet's natural systems and providing a high quality of life for people.

Social sustainability is based on maintaining social cohesion and the ability to work towards common goals. It would mean, taking the example of a company, taking into account the social consequences of its activity at all levels: workers (working conditions, salary level, etc.), suppliers, customers, local communities and society in general. It refers to adopting values to maintain a good standard of living in the population of a country, in the social aspects either the enrollment of the same people to create something new in the society where they are part (Instituto Nacional y Geografía e Informática, Mex. 2000)

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Research methodology

The research is non-experimental and descriptive and consists of getting to know the situations, customs and predominant attitudes through the exact description of the activities, objects, processes and people. Its goal is not limited to data collection, but to predict and identify the relationships that exist between two or more variables. (Dalen and Meyer 2006). For the research, an instrument was designed that is used in the Self-Diagnosis tool, Integral Instrument for the Measurement of Productivity (IIMP) of the Libraries subject to the studies, where the ten elements are measured (Measurements related to the final user, Measurements and/or performance of the process, Alliances with suppliers, Documentation, Training, Benchmarking, Adaptability of the process, Continuous improvement, Evaluation of the human resource, Evaluation of the managerial level), with each one of the sub-elements as shown in Table N°1 and No. 2 of this research, where only 2 of the 10 elements mentioned are shown. The purpose of this instrument is to obtain information related to the advances achieved in the Integral scheme of the system, while it is useful as a self-diagnosis for the organization as a first aspect. Meetings were held with eight libraries to gather information, but for the subject of this research, only two libraries were subsequently contacted and used as samples. The Delphi method was used to meet with experts from these libraries.

Instrument

Instructions:

Below are questions in each of the elements referring to the company, which integrate it, mark with an "X" under the number you consider convenient.

Integral Instrument of Self-Diagnosis of Productivity (IIMP)**.**

Element 1 End-user related measurements

Objective: To know all the aspects related to the client and that impact the processes of the organization

	Advances in %.										
	Sub-element Description	10	20	30	40	50	60	70	80	90	100
1	Do you have well defined, who are your users?										
2	Do you have a method, which provides you with updated information, to know the needs of your users?										
3	Do you have any system or programs that provide staff skills for user care?										
4	Do you have a process to receive and solve possible disconformities of the users?										
5	Do you have a system to know if the user is satisfied with your services?										
6	Do you have a process that allows them to compare the practices of your system with other agencies?										
7	Do you have programs to empower the staff in contact with the user?										
8	Do you have indicators of effectiveness and efficiency in relation to users?										

Table 1 Integral instrument for the measurement of Productivity, element 1.
Source: Author's Perception 2020

Integral Instrument of Self-Diagnosis of Productivity (IIMP).

Element 2. Process Measurement and/or Performance

Objective: To analyze integrally each one of the actions that are developed in the processes and their interrelation among them, for the achievement of the integral objective

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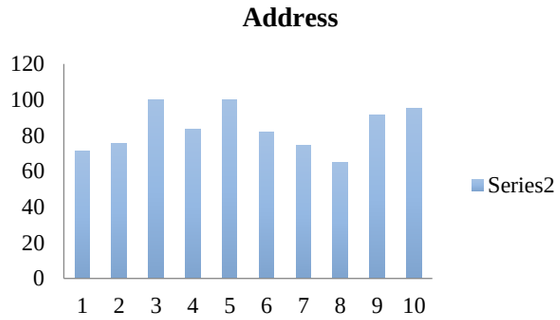
	Advances in %.										
	Sub-element Description	10	20	30	40	50	60	70	80	90	100
1	Do you have any method that allows the measurement of the productivity of the processes?										
2	Do you periodically evaluate the areas of the unit?										
3	Does it evaluate the impact of the cultural, economic and technological variable on the performance of the processes?										
4	How immediately does it detect the low performance of the processes applied in the unit?										
5	Does it have a process that allows to measure and compare with other units?										
6	Does it have a cycle of improvement in the processes?										
7	Do you have identified, which are your processes?										

Table Integral instrument for the measurement of Productivity, element 2
Source: Author's Perception 2020

There were 7 areas that the instrument was applied: Management, INEGI area, general area, Newspaper library area, computer area, children's area and consultation area. Graphs 1 and 2 show the first two areas. Where the evaluation criteria and the ten elements to be considered in the self-diagnostic tool (IMPP) are given

	Measurement Elements
1	Related measurements
2	Measurement and/or performance
3	Alliance with supplier
4	Documentation
5	Training
6	Benchmarking
7	Process adaptability
8	Continuous Improvement
9	Human resource evaluation
10	Management level assessment

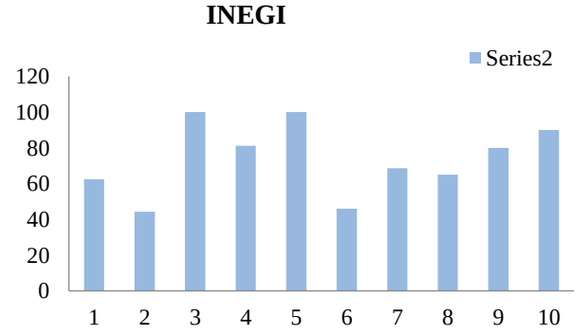


Graphic 1 Management Department
Source: Author's Perception 2020

Overall Average 83.9 Under developmen

In this Graphic 1, using the ten measurement elements, a percentage of 83.9% was obtained where it can be determined that the development scale measurement is high and indicates a favorable development in the libraries.

%	Dependency Development Scale
10-30	Primitive
40-50	Initial
60-80	In development
90-100	Focus on productivity



Graphic 2 INEGI Area
Source: Author's Perception 2020

Overall Average 73.8 Under development

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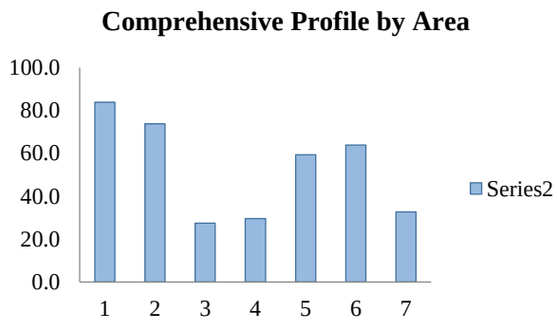
In this area of INEGI, the result that was obtained, before the application of the elements to the libraries, was of a percentage of 73.8 % in this area like the past area, the scale is of development indicating that it is in a stable productivity.

Results

In figure 3, the integral profile of each of the 8 areas that were considered of the libraries is shown. The same evaluation criteria were used and the 10 elements considered in the self-diagnostic tool shown in Graphic 1.

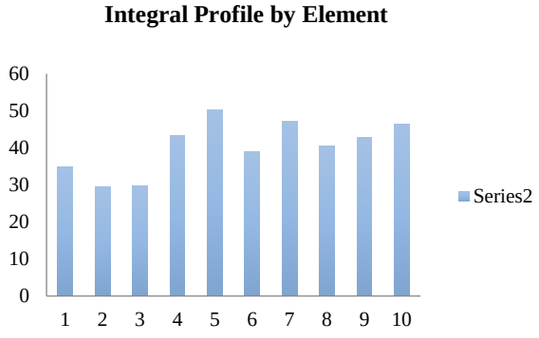


Graphic 3 Library Areas
Source: Author's Perception 2020

In this Graphic 3, the result of the areas of libraries, you can see that the overall average per element is 87.1%, placing the different areas in full development of productivity.

Overall Average 87.1 Initial

Figure 4 shows the Comprehensive Profile by element of the 10 elements of the Comprehensive Productivity Self-Diagnostic Instrument (IIMP)**.**



Graphic 4 Library Areas
Source: Author's Perception 2020

Overall Average 50.9 Initial

In Graphic 4 it can be seen that the general average per element is 50.9%, which indicates that there is an initial development as a result of the application of the Self-Diagnosis instrument.

The measurement instrument was applied to the managers and to each of the persons responsible for the different areas of the libraries. They were interviewed in order to know the possible problems that require due attention, for an improvement in the dependence and to be able to know their strengths and reinforce them for a growth in productivity.

Through the self-diagnosis carried out on the libraries, it was possible to identify their strengths and weaknesses in a comprehensive way, as well as to know their deficiencies or shortages in the various organizational, administrative, commercial and operational procedures. The self-diagnosis also serves to identify the actions that must be executed to comply with current legislation, planning processes and good governance of the unit and the progress in the execution of the business plan in the short, medium and long term. A major deficiency was found that affects the performance of the entire unit, the dissatisfaction of users and the same people in charge of the various areas of the libraries**.**

Conclusions

Derived from the self-diagnostic instrument where the sustainability productivity was measured and where it was determined that the servers do not have a specific information and do not know if the client or user has a quality service. And that most of them do not have a web page. The areas of the libraries should be strengthened, since this is reflected in the instrument used with 87.1% which indicates that they are under development, so it is proposed to strengthen with updated software, updated bibliographies, improvement in customer service. In the analysis of the 10 elements, it shows a 50.9%, which indicates that there is an initial development in the libraries. It is necessary to strengthen the measurements related to the client, measurements and/or performance of the process, as well as its Alliances with suppliers.

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Article **ECORFAN Journal-Republic of Paraguay**
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Geosites of interest as a geopheritage of Jalisco, Mexico. Progress

Geositios de interés como geopatrimonio de Jalisco, México. Avances

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Abstract

Conserving the geological heritage in Jalisco implies, identifying, classifying and substantiating the importance of geosites in Jalisco and its subsequent dissemination through geotourism. The above can contribute to the creation of geo-park (s), according to the definition and methodology of UNESCO, with the consequent economic benefit to the inhabitants of these regions. The disclosure of geological information encourages an appreciation and care of abiotic resources (rocks, minerals, fossils, morphology, soil and water), especially prior to productive activities, minimizing their damage or avoiding building in areas with geological hazards. Jalisco has a great geo-diversity, compared to other states, its history begins approximately 200 million years ago, recorded in the Sierra Madre del Sur and in the Jalisco Block, the most recent volcanic and tectonic activity is recorded in the Volcanic Belt Mexican. The previous provinces, together with the Sierra Madre Occidental and the Central Plateau, contain a wide range of rocks, fossil areas of economic and cultural importance (most of 70 places) and relate the geological history and its dynamics. Geothermal activity, is present in 400 locations.

Geological Heritage, Geotourism, Jalisco

Resumen

Conservar el patrimonio geológico en Jalisco, implica, identificar, clasificar y fundamentar la importancia de geositios en Jalisco y su posterior divulgación mediante el geoturismo. Lo anterior puede contribuir a la creación de geo-parque(s), de acuerdo a la definición y metodología de la UNESCO, con el consecuente beneficio económico hacia los pobladores de estas regiones. La divulgación de la información geológica, propicia un aprecio y cuidado de los recursos abióticos (rocas, minerales, fósiles, morfología, suelo y agua), previo a las actividades productivas, minimizando su daño y limitando construir en zonas con amenazas geológicas. Jalisco tiene una gran geo-diversidad, en comparación con otros estados, su historia inicia aproximadamente hace 200 millones de años, registrada en la Sierra Madre del Sur y en el Bloque Jalisco, la actividad volcánica y tectónica más reciente se registra en la Faja Volcánica Mexicana. Las anteriores provincias, conjunto con la Sierra Madre Occidental y la Meseta Central, contiene una amplia gama de rocas, zonas fosilíferas de importancia económica y cultural (más de 70 sitios) y relatan la historia geológica y su dinámica. La actividad geotérmica, está presente en 400 localidades.

Patrimonio Geológico, Geoturismo, Jalisco

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Introduction

In coordination with the "International Geosciences and Geoparks Program", developed by UNESCO, recognized since 2015, responsible for promoting and establishing guidelines and requirements for the creation of Geoparks. It is proposed to develop geo-tourism in Jalisco, prior identification and classification of geo-sites of interest in Jalisco, so that these, in the future, become part of the entity's natural heritage and later consolidate a proposal to form a geopark.

The Global Network of Geo-parks is integrated (June 2020), by 147 in 41 countries on five continents, in the case of Mexico we have two Geo-parks recognized by UNESCO; Comarca Mining, Hidalgo and Mixteca Alta, Oaxaca. Recently in Mexico, the Huasteca Potosina (San Luis Potosí) and Peña de Bernal, Querétaro have been proposed. So that, get recognition.

The Secretary General of the United Nations, António Guterres on World Tourism Day (https://www.telesurtv.net/news/onu-antonio-guterres-turismo-mensaje-dia-mundial-20200927-0012.html), shares in his speech on tourism; "The pandemic that we are currently experiencing has forced us to limit mobility, especially traveling as tourists, which has indirectly damaged the economy of the tourism industry (which employs one in 10 people on Earth), return, It must be planned with greater security, to visit safe places, such as the open country, rather than cities or places with crowds", so that national or international tourists can be offered an alternative, such as geotourism and take him to visit sites of geological interest and disseminate the importance of abiotic resources. In this regard, the same secretary indicates that; In this difficult year, let's focus on the importance of tourism to people living in rural areas, so that we can deliver on the promise of the Sustainable Development Goals to leave no one behind.

The national geoparks are examples of the attractiveness of geotourism for the national and international community, and obviously of the resulting benefit for the inhabitants of the place, due to the economic spillover generated. In Jalisco there are places that are visited by; landscape, culture, crafts, thermal spas and gastronomy, among other topics, for people who like geo-adventure (see figures 1, 2 and 3).

Figure 1 Landscape. Nevado de Colima, overlooking the Fuego volcano, Mexico

Figure 2 Mining; Diatom (left) and Opal (right) mines

Figure 3 Unique formations. Las Piedrotas and sales of crafts and gastronomy, Tapalpa Jalisco

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General objective

Identify relevant geosites in the state of Jalisco.

Specific objectives

– Categorize the geosites of Jalisco

– Organize the Jalisco geosites according to their characteristics.

Methodology

UNESCO is responsible for establishing guidelines and requirements for the creation of Geoparks. Following the proposed methodology, we begin by reviewing the literature on geology and geomorphology within the Mexican Republic. Jalisco stands out in geo-diversity due to the following characteristics;

Location within four geological provinces; Sierra Madre Occidental (Nieto, 2000), Mexican Volcanic Belt (De la Fuente and Verma, 1993, Ferriz and Mahood 1986, and Ferrari and Rosas-Elguera, 2000), Central Plateau and Sierra Madre del Sur, each with features Specific lithological, tectonic and chronological, which give a common lithological diversity in a state (see figures 4 and 5).

Paleontological wealth (Amezcua, 2000, Montellano, 1997, Morales, 1996, Carranza, 1980 and Maciel 2006) (figure 5), which show climatic changes (Maciel 2006), geodynamic (Michaud, Bourgois and Parrot, 1992, Rosas-Elguera , Urrutia Fucugauchi, & Maciel-Flores 1989, Rosas-Elguera, Nieto, and Urrutia-Fucugauchi 1993 and Maciel and Rosas Elguera 2006ª and Mahood, 1980) and habitats (Gama-Castro, Palacios -Mayorga and Alcalá Martínez 1990, Jáuregui, 1997) that have occurred throughout the geological history of the state.

From an economic point of view (SGM 2018) we have natural resources, such as mining (figures 4 and 5) and geothermal (see figure 6), (Venegas, Herrera, and Maciel 1985, Kruger, Aragón, Maciel-Flores, Lucio and Villa 1988, Maciel and Rosas Elguera 1992) or groundwater (Maciel 2014).

Figures 4 and 5 Left Collection of Rocks, Minerals and Fossils (CRMF) in the University Center of Biological and Agricultural Sciences of the University of Guadalajara and collection (by students of the geophysics career of the UdeG), of diatoms in mine of San Andrés Figueroa (right)

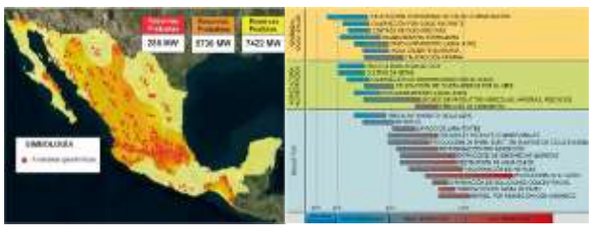

Figure 6 Geothermal Resources of Mexico Potential and Geothermal Uses (Secretaría de Energía 2013)

Publications on geology have been prepared by national and international universities and institutions, such as the Federal Electricity Commission, Petróleos Mexicanos, the Mexican Geological Service, and private mining companies.

On the subject of geopark, geosites, geological heritage and geotourism at the national level; highlights the book published by Palacio et al (2018), "Geoparques. Guide for the formulation of projects; De la Peña G. 2006. Indigenous cultures of Jalisco. The popular cultures of Jalisco; Maciel-Flores, Maciel-Tejeda and Rosas-Elguera (2015). Biodiversity in Jalisco. State Study; De la Fuente-G., J. and Verma, S. P., (1993), Catalog of volcanic devices of the central-western part of the Mexican Volcanic Belt; López-Ramos E. (1995), Geological Chart of the States of Jalisco and Aguascalientes; Lugo Hubp José and Córdova Carlos (1990). Geomorphological regionalization of the Mexican Republic; Montellano B. M. (1997), New locality of Late Hemphillian vertebrates in Teocaltiche, Jalisco, Mexico.

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At the international level, those presented by; UNESCO, (1972) Convention on the Protection of the World Cultural and Natural Heritage; Brilha J. (2016). Inventory and quantitative evaluation of geo-sites and geo-diversity sites: a review; Carcavilla Lu. (2012). Geoconservation. Ross K. et al (2010). Global Geotourism Perspectives; Tourtellot, J.B. (2009). Geotourism for your community; Wimbledon W, et al (1999). Geological World Heritage: GEOSITES - A comparative global inventory of sites to enable prioritization of conservation.

In this document we will define geological heritage as the places or points of geological interest commonly referred to as geosites (Wimbledon et al., 2000), which can be promoted through geotourism, which according to the geological perspective is defined as a form of tourism of natural areas that specifically focuses on geology and landscape.

Representative examples of geo-sites are; The type localities that describe a geological formation and the stratotypes and global boundary points, known as “golden nail” sites (Global Boundary stratotype Section and Point, GBSSP; see www.stratigraphy.org/gssp), among others. Sites of exclusively scientific interest derived from geological processes and that are located in their original place (in situ) must be included; for example, exemplary landforms, paleontological sites, collections of rocks, fossils or minerals displayed in a museum.

The values of geological heritage Geological heritage and geoheritage refer to certain elements of geodiversity that contain values that make their conservation desirable. The fundamental value that every geosite must have to be considered heritage is the scientific or intrinsic value, to which is added another series of values, also known as added or additional values, among which the educational, the tourist and the cultural stand out (Gray , 2004 and Brilha, 2016).

Geotourism is a relatively new form of sustainable tourism basically of an educational nature, focused on scientific dissemination. It is tourism with a primary focus on experiencing the geological features of the Earth in a way that encourages environmental and cultural understanding, appreciation and conservation and is also locally beneficial (Dowling, 2010).

Geotourism has two orientations: one geological, based on the identification, valuation and promotion of the geological - geomorphological heritage as a tourist attraction and another, of a geographical nature, focused on the promotion of said features based on their relationships with biological and human elements. , which together give meaning and structure to a territory. Due to its characteristics, Geo-tourism can be framed within "Tourism in contact with nature" or "Tourism based on nature"; It arises from the consideration of geological and geomorphological features as a tourist attraction and their educational and scientific value.

Geotourism approaches As mentioned, geo-tourism has been conceptualized from two different aspects: geological and geographical (Carcavilla et al., 2012). According to the geological perspective, it is made up of two elements: geology (which includes forms and processes) and tourism (tourist visits, learning, appreciation and attraction in geosites), being conceived then as:

A form of natural area tourism that specifically focuses on geology and landscape. It promotes tourism to geo-sites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. This is achieved through independent visits (self-guided, without the intervention of guides / interpreters) to geological features, use of geological paths and vantage points, tour guides, geoactivities, and sponsorship of geosite visit centers (Newsome and Dowling, 2010).

Promote tourism to geosites and the conservation of geodiversity and an understanding of Earth sciences through appreciation and learning, one of the important factors is the spilling of foreign exchange to rural communities. This is achieved through independent visits (self-guided, without the intervention of guides / interpreters) to sites with geological characteristics, use of geological paths and vantage points, tour guides, geoactivities and sponsorship of geosite visit centers (Newsome and Dowling, 2010).

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A study developed by the United Kingdom National Commisions for UNESCO, 2012, Winder Value of the UNESCO to the UK, concludes that geoparks have a greater economic impact when compared to world heritage and biosphere reserves They are the geo-parks with an annual spill of 2.9 million pounds sterling, followed by world heritage with 2.2. and finally biosphere reserves with 0.38.

Contribution

The census of geo-sites of interest in Jalisco has begun, to start with this new activity in the state and to register the geosites that are identified as natural heritage. To date, there is a preliminary census of about 70 geosites of tourist, cultural and academic importance and about 400 hot springs.

They have been organized by topic; Volcanoes; Colima, Tequila, Mascota, Apaxtepec and La Primavera

Tectonics; Unión Triple (Grabens de; Chapala, Colima and Tepic-Chapala) and active faults.

Rocky formations; Coasts with sandy and rocky beaches. Waterfalls of San Sebastián, El Caballo, El Salto. Piedras Bola, Las Piedrotas, El Diente, Giant Pumice, Black Pumice, Islands. Hydrological; Mineral waters of Mixtlán. Lagoons and Paleolagos; La Primavera, Río Santiago, Ameca, Zapotlán, Juanacatlán, Villa Corona, Chapala, San Marcos, Sayula, La María.

Landscapes; La Bufa in San Sebastián, Mascota, Mazamitla, Agavero.

Fossiliferous areas; Rio Santiago, Chapala, San Marcos, Cocula, Sayula

Localities with geological risks (tectonic and volcanic); Colima volcano and the Chapala graben.

Museums and archaeological sites; 50 museums, Guachimontones, Ixtepéte, churches and farms.

Geothermal, 400 locations with possibilities of non-electric use, SPA and spas.

It remains to integrate other attractions, know and also promote gastronomic culture, crafts, archaeological sites, museums and landscapes, in order to have an inventory of geosites and places of interest in Jalisco, to bring them together to function as trails or networks, considering A starting point.

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Heat Islands in the city of San Francisco de Campeche: Detection and solution

Islas de calor en la ciudad de San Francisco de Campeche: Detección y solución

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Abstract

This paper presents the identification of heat islands in the city of San Francisco de Campeche, period 1990 - 2020 and their relationship with changes in the vegetation cover areas. To identify the heat islands in the city, 6 Landsat 5 (TM), 7 (TM) and 8 (OIL) images were obtained from the USGS database (http://earthexplorer.usgs.gov/). In geographic information software, soil temperature was calculated from a mathematical algorithm applied to thermal infrared bands 6 and 10, in addition, the Normalized Difference Vegetation Index (NDVI) was calculated, in order to find a relationship between changes in temperature and vegetation cover. It was found that the green areas have reduced their surface by more than 50% and the soil temperature has increased up to 7 ° C.

Landsat, Campeche, Heat Islands

Resumen

Este trabajo presenta la identificación de islas de calor en la ciudad de San Francisco de Campeche, período 1990 - 2020 y su relación con cambios en las áreas de cobertura vegetal. Para identificar las islas de calor en la ciudad, se obtuvieron 6 imágenes Landsat 5 (TM), 7 (TM) y 8 (OIL) de la base de datos del USGS (http://earthexplorer.usgs.gov/). En software de información geográfica se calculó la temperatura del suelo a partir de un algoritmo matemático aplicado a las bandas de infrarrojos térmicos 6 y 10, además, se calculó el Índice de Vegetación de Diferencia Normalizada (NDVI), con el fin de encontrar una relación entre cambios de temperatura y cobertura vegetal. Se encontró que las áreas verdes han reducido su superficie en más de un 50% y la temperatura del suelo ha aumentado hasta los 7 ° C.

Landsat, Campeche, Isla de calor

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Introduction

Urbanization and industrialization offer a better quality of life, which translates into greater comfort; however, they also induce many problems for human beings, such as global warming, industrial waste and pollution. In addition to the global impacts that are generated, there is an imbalance in urban areas where the increase and excess of industrial activities and the use of synthetic construction materials are more frequent; as a result, the environment is affected and the population is more vulnerable to problems associated with urbanization (Rizwan et al. 2008).

One of the phenomena generated in cities are the so-called Urban Heat Islands. The Urban Heat Islands (UHI) is a phenomenon referred to the presence of warmer air in certain areas of a city compared to its surroundings and that can be exacerbated in coastal cities due to the climatic variations that occur. Heat islands have acquired particular relevance in recent years due to the growing impact of climate change and its variability in urban spaces; therefore, these thermal anomalies aggravate the picture of pollution and degradation of the quality of the habitat (Fuentes Pérez 2014).

This heat is mainly due to the heat stored and radiated by the constant growth of urban structures (Rizwan et al. 2008); large amounts of solar radiation are stored and re-irradiated, mainly in areas with a higher population concentration due to construction material and the decrease in vegetated areas due to changes in land use; In addition, a high roughness reduces the removal of heat by convection.

It has been suggested to reduce anthropogenic heat release and make design changes, use of trees, cooler roofs, suitable building material and proper building design to reduce high heat intensity (Rizwan et al. 2008). Of all the proposed measures, the reforestation of cities is a highly promising solution.

The main objective of this article is to quantify the increase in temperature in the City of San Francisco de Campeche for the period 1990 - 2020 and its relationship with changes in land use. The areas with the highest temperature increase were identified and the construction of green corridors is proposed as a mitigation measure.

Study area

The city of San Francisco de Campeche is the main head of the state, which has a territorial extension of 3,410.64 km2 (6% of the total state territory). It is located at the coordinates19° 50' 41'' N y 90°32' 23'' W with an average altitude of 5 meters above sea level. According to the count of INEGI (2005) has a population of 211 671 inhabitants (28% of the state), which represents 88.6% of the total municipality.

In San Francisco de Campeche, the average annual temperature is 27 °C, with maximum levels in summer with an average of 28 °C and a historical maximum temperature of 43 °C. It has a warm - humid climate with three seasons defined as follows: from June to the end of September is the rainy season; October to January is the "Nortes" season or winter storms and the dry season from February to May (Rivera Arriaga et al. 2012). Average annual rainfall is 1096.7 mm, with the highest precipitation from July to September (CONAGUA, 2004).

Figure 1 Study area

Methodology

Calculating the intensity of UHIs requires calculating the Land Surface Temperature (LST). For this, the thermal bands of satellite images were used and were processed by means of a geographic information system; since they are a main tool for the treatment of environmental problems that exist in Latin American cities, due to the scarce information available and the precariousness of the monitoring and observation systems of environmental changes.

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For the city of San Francisco de Campeche, 14 Landsat 5 (TM), 7 (TM) and 8 (OLI) images were used for the period 1990 - 2020 obtained from the USGS database. (http://earthexplorer.usgs.gov/); the analyzed images belong to the months of April or May, in order to characterize the temperature of the dry season. Band 6 was used for TM images and band 10 was used for OLI images. (Li et al. 2016). Briefly, the satellite radiances of the thermal bands were converted to brightness temperatures at the sensor using the equation (1):

$$T_B = \frac{K_2}{\ln\left(\frac{K_1}{L_\lambda}+1\right)} \quad (1)$$

Where T_B is the brightness temperature of the sensor in Kelvin; L L is equal to a satellite radiance derived from the preprocessing step; the values of K_1 y K_2 are obtained from the metadata of the respective Landsat images. The generated gloss temperature values were then converted to LST with emissivity correction (T_s) in Kelvin using the equation (2):

$$T_s = \frac{T_B}{1+\left[\left(\lambda \, x \frac{T_B}{\alpha}\right)\ln\varepsilon\right]} \quad (2)$$

Where λ is the wavelength of the emitted radiance equal to$11.5\,\mu m$; $\alpha = \frac{hc}{b}(1.438\,x\,10^{-2}mk)$, b refers to Boltzman´s constant as $1.38\,x\,10^{-23}J/K$; h is Planck's constant which is equal to $6.626\,x\,10^{-34}\,JS$; c refers to the speed of light $2.998\,x\,10^{8}\,m/s$ and ε is the surface emissivity.

San Francisco de Campeche is a heterogeneous region; therefore, it was necessary to consider the effect of surface emissivity ε when estimating the LST. Here, the normalized difference vegetation index (NDVI) threshold method was applied to different land cover classes; for this, the red and near infrared 1 bands were used. First, the emissivity of the pixels of bodies of water was assigned as 0.990 (Deng and Wu 2013). Then, an emissivity of 0.985 was assigned to each pixel with a normalized difference vegetation index value (NDVI) ≥ 0.5. These pixels were considered to be fully vegetated. Finally, for the remaining pixels (that is, covered with sparse and accumulated vegetation), an emissivity was calculated based on equations 3 to 5 (Deng and Wu 2013).

$$\varepsilon_{mix} = \varepsilon_v P_v + \varepsilon_n(1 - P_v) + C_i \quad (3)$$

$$P_V = \left(\frac{NDVI - NDVI_{min}}{NDVI_{max} - NDVI_{min}}\right)^2 \quad (4)$$

$$C_i = (1-\varepsilon_n)(1-P_V)F\varepsilon_V \quad (5)$$

Where $\varepsilon_V = 0.985\,(vegetation)$ and $\varepsilon_n = 0.92\,(urban\ surface)$ (Li et al. 2011); $NDVI_{max}$ y $NDVI_{min}$ are the values of the complete vegetation and no vegetation respectively; P_v is the NVDI scaling / splitting vegetation cover, C_i is the effect of the geometric distribution of natural surfaces and internal reflections (Sobrino et al., 2004) and F=0. which refers to the shape factor for the geometric distribution. The LST calculated in Kelvin was then converted to Celsius for easy interpretation.

Results

Between 1990 and 2020 there was a physical expansion of the city that was oriented in all directions, mainly caused by the invasion of land that was transformed into residential areas. This expansion is also related to the increase in the number of inhabitants, which is why the growth is caused by the need for housing. It was found that the green areas of the city have reduced their surface by little more than 50% for the period 1990 - 2020.

Due to the presence of cloud cover and gaps in some of the Landsat images, the images analyzed here had to meet the criteria of having less than 10% surface coverage with clouds and no gaps. Figure 2 shows a map of the distribution of surface temperatures for the year 1990, it is observed that the maximum temperatures recorded correspond to 35 °C on average and are located in the downtown area of the city, as well as in some points where there are constructions in process or modifications of land use such as the change from a natural area to cultivation areas (polygons in Figure 2).

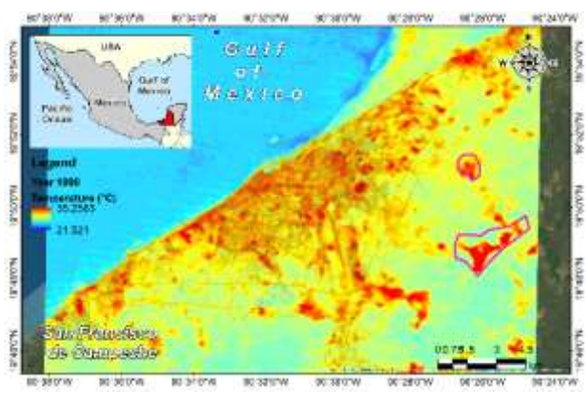

Figure 2 Temperature distribution map for the year 1990

In Figure 3, a map of the distribution of surface temperatures for the year 2020 is presented; Maximum temperatures are close to 42 ° C and minimum (on the map scale) of 17.9 ° C, the latter due to the presence of cloudiness over the city. It is appreciated that the periphery is where there are areas with higher temperatures than their surroundings; Areas such as the historic center and avenues that have been rebuilt in the last 5 years, a decrease in vegetation coverage has been observed and as a consequence an increase in surface temperature compared to previous years, which is why they present areas that we can call Heat Islands.

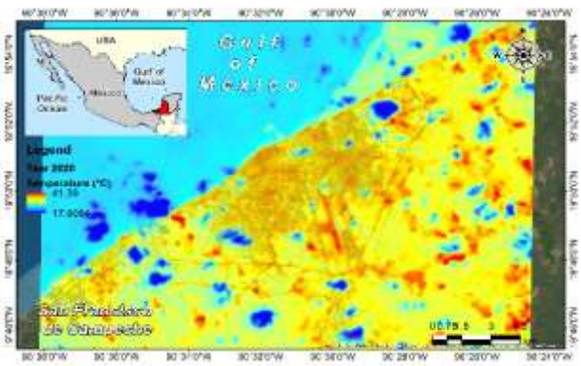

Figure 3 Temperature distribution map for the year 2020

16 points of interest were identified within the city that could make it possible to assess whether or not there has been an increase in temperature; In Figure 4, the location map of the points is presented.

Figure 4 Location of sampling points

And in Figure 5, the graphs of the temperature values recorded for the points are presented. To obtain a better representation of the temperature changes, it was decided to present the results in periods of 5 years, whenever possible.

It is observed that from the period 1990 to 2011 the temperature in most of the points has a variation range of ±1 °C; while between 2011 and 2015, the temperature had an average increase of 5 °C; With the exception of point 8, in which a decrease is observed, this due to the presence of a cloud in the analyzed image. Point 15 is observed to have an increase of up to 7 °C compared to 2011.

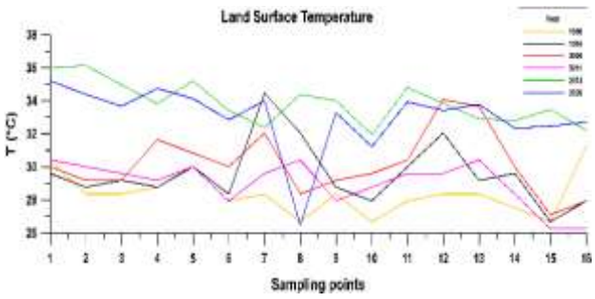

Figure 5 Sampling points and associated temperature for the years under analysis

Conclusions

The increase in soil temperature in the city of San Francisco de Campeche has a direct relationship with the reduction of vegetated areas; reaching increases of up to 7 ° C in a period of 30 years. With this proportion of temperature increase of 0.23 ° C per year, and if the conditions of urban growth are maintained without planning or conservation of the natural environment in the next 10 years, temperatures of up to 40 ° C would be expected in the city in the dry season.

Although the increase may seem negligible, it is this increase in temperature that leads to an increase in the use of air conditioning equipment, causing an increase in energy demand and the generation of greater atmospheric pollutants (CO_2, NO, SO_2, PM); on the other hand, the occurrence of diseases increases, especially respiratory ones. Furthermore, the UHIs generate a convective ascent over the city, generating a low relative atmospheric pressure that accentuates the local circulation of air, causing the displacement of polluted air masses to other sectors of the city.

Therefore, it is proposed to evaluate the construction of green corridors in strategic points of the city as a measure of mitigation and reduction of heat islands.

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These corridors should be located mainly in areas with a greater influx of people such as parks, avenues and other recreation areas, as well as highly dense housing complexes.

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Strategies to promote the Inclusion of People with Visual Disabilities in the Technological Institute of Villahermosa

Estrategias para propiciar la Inclusión de Personas con Discapacidad Visual en el Instituto Tecnológico de Villahermosa

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Abstract

The objective of this article is to show the actions generated in the initial educational program of the Technological Institute of Villahermosa for the inclusion of persons with visual disabilities, from which mechanisms for improvement were established in a positive way with a view to becoming an inclusive institution. Interest in people with special educational needs for a bachelor's degree is growing; in Tabasco State, there are higher middle-level institutions working for inclusion. Therefore, it is necessary to create opportunities for improvement not only in the curricula and programs of study, but also to make the actors become aware, trained and takes action to meet this demand. To involve competent authorities of the needs required in infrastructure, training, furniture and various adaptations that involve the teaching-learning process. Some of these necessities were identified in the Institute through the routes and surveys carried out on the basis of the Standards for the Accessibility of Persons with Disabilities.

Inclusion, Disability, Opportunity

Resumen

El objetivo del presente artículo es mostrar las acciones generadas en el programa inicial de educación del Instituto Tecnológico de Villahermosa para la inclusión de personas con discapacidad visual, a partir de las cuales, se establecieron mecanismos de mejora de forma propositiva con miras a constituirnos como una institución inclusiva. El interés en personas con necesidades educativas especiales por cursar una carrera de licenciatura está creciendo; en el estado de Tabasco, hay instituciones de nivel medio superior que están trabajando en favor de la inclusión. Por tanto, es necesario crear oportunidades de mejora no sólo en los planes y programas de estudio, sino también lograr que los actores se concienticen, se capaciten y tomen acciones para afrontar esta demanda. Hacer partícipes a las autoridades competentes de las necesidades que se requieren en infraestructura, capacitación, mobiliario y adecuaciones diversas que involucra el proceso de enseñanza-aprendizaje. Parte de estas necesidades se identificaron en el Instituto mediante los recorridos y levantamientos realizados con fundamento en las Normas para la Accesibilidad de las Personas con Discapacidad.

Inclusión, Discapacidad, Oportunidad

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Introduction

Different ways have been developed to conceptualize disability, one of the aspects involves a model of medical science and the other considers the social aspect. As a medical model, a diagnosis is assumed with a treatment aimed at a better adaptation of the person and a change in behavior. On the other hand, the social model of disability considers the phenomenon mainly as a "social" problem, from the point of view of the integration of people with disabilities into society.

The concept evolves as a result of the interaction between people with disabilities as well as the barriers they face, due to the attitude of others and the environment that prevent their full and effective participation in society, on an equal basis with others. This has allowed us to move from a pejorative definition of disability to a more humane definition of disability. Currently we can identify different disabilities, for example: physical, intellectual, mental, psychosocial, multiple, sensory (hearing, visual), among others. In 1983 the WHO defined 'disability' as "any restriction or absence (due to an impairment), of the ability to perform an activity in the manner or within the range considered normal for a human being" (WHO, 1983: 56).

Disability is not an attribute of the person, but a complicated set of conditions, many of which are created by the social environment. Therefore, managing the problem requires social action and it is society's collective responsibility to make the necessary modifications for the full participation of persons with disabilities in all areas of social life. The issue is, therefore, at the level of attitudes and ideology, and requires social changes, which are transformed at the political level into a human rights issue. The search for mechanisms that undertake a change in the structures of academic training with an inclusive model is a topic of interest incorporated in the Integral Educational Models. The educational institutions must work to create the ideal space that offers not only stability and security to people with disabilities, but also something broader and deeper that affects not only the physical adjustments, since radical change involves commitment, dedication and responsibility, all in all, seen as an opportunity to improve the socio-economic development of the country.

A society must attend to the needs of the disabled population, and not vice versa, that disabled people are integrated into our environment. The first thing is inclusion, the second is integration. The figure of the teacher plays an important role in inclusion, he or she should not only be a knowledge manager, that is, not only should he or she be involved in the classroom, he or she should also be a researcher, a leader who promotes the solution to the problems experienced in schools. This will allow him to be sensitive and empathize with the needs of students.

This is how being inclusive will be achieved. You cannot be inclusive from the oral, from the speech. It is necessary to really get involved in the multiple realities that the Others bring with them. Building an inclusive classroom requires that the teacher be willing to act positively in favor of this. This also involves his or her peers, parents, and even the students themselves. Working alone on this issue wears out the will, as inclusion is a process, not an overnight change. In this regard, UNESCO (2020) states: "Inclusion... is a process: measures and practices that embrace diversity and create a sense of belonging, based on the conviction that each person has value and potential and must be respected. […]" (p.11). It should be thought that if learning communities are formed, where win-win is the condition, students learn, but also teachers. "Careful planning and the provision of inclusive education can lead to improvements in academic performance, social and emotional development, self-esteem, and peer acceptance. (UNESCO, 2020, P.18)".

We recognize the benefits of inclusive education for human development. In this way our institution contributes to the eradication of discrimination and stigmatization of people in our classrooms. On the other hand, the support currently provided by technological development to the student community with special educational needs is immeasurable; it has allowed many young people to have access to education at any level; the various technical innovations have reduced the gap between the vulnerable population and the educational institutions. However, there are still countries and/or cities that do not have the economic and, therefore, technological resources to be able to receive their visitors or users with some kind of disability, in their own facilities according to their conditions.

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Hence the importance of opening various activities that allow our students and future professionals, not only to be trained but also to be aware of the needs that people with disabilities live and that together we can, from interdisciplinary work, create favorable actions with a view to constitute ourselves as an inclusive technology.

For all these reasons, we have set ourselves the following questions to guide our work in the field. What kind of actions are necessary to undertake to constitute ourselves as an inclusive Institute? How suitable is the design of the physical infrastructure and furniture of the Institute?

Metodología

In order to develop the actions contemplated in the initial plan for inclusive education, the first stage was carried out in the field. Raising information in situ by means of the physical tour, with the purpose of directly observing the characteristics and conditions of the institute's infrastructure. Likewise, determining if the construction was aligned with the Manual of Technical Standards of Accessibility and the precepts of the General Law for the Inclusion of Persons with Disabilities, specifically for blind people. In the second stage, objects and/or artifacts were identified that would serve as support or satisfaction for the blind. This search provided the basis for the creation of prototypes ad hoc to the needs of the institute.

Likewise, the bibliographic research that was carried out on the needs of blind people, allowed to concentrate data and information to design relevant proposals strengthened in a conceptual theoretical framework proper of a formal research.

It is worth mentioning that the methodological design to carry out the diagnosis of the current situation regarding the problems under study, was focused on the realization of the following activities:

I. Detection of the problem.
II. Description of the scenario, to identify the current conditions of the facilities.
III. Strategic planning of the improvement actions to be implemented.
IV. Delivery of results to promote the development of strategies in the teaching, student and administrative community.

The methodological proposal that was developed allowed to give way to the proposal of the ITVH Initial Education Program for the Inclusion of People with Visual Disabilities, and considered the design, development and dissemination of the following products:

a. The key routes or walkways for orientation and access to the buildings
b. Supporting signs to identify the buildings.
c. Awareness posters on how to help blind people
d. Design and printing of information leaflet

Diagnosis of current conditions

The Tecnológico Nacional de México Villahermosa campus is located at km.3.5 of the Villahermosa-Frontera highway, in the state of Tabasco. It currently has 31 buildings, most of which are two-storey. A population of approximately 5000 people, made up of teaching, administrative, support and assistance personnel and students; the latter represent approximately 88% of the aforementioned population.

In order to understand the problems that are presented in the Institute, the following are listed in Table 1, the aspects found in the physical infrastructure and furniture and the state they keep with respect to the recommendations indicated by the Technical Standards Manual for Accessibility of People with Disabilities; these data were collected through an observation card, documented with photographs:

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What you have	Complies with the	
	Yes	No
Access ramps (without signs, dimensions, painting and proper angle of inclination)		X
Toilets (With adapted for people with wheelchairs)	X	
Toilets and sinks for people with dwarfism	X	
Sound system with speakers for broadcasting	X	
Elevator in a building.	X	
Hands on some buildings.		X
Furniture for left-handed people.	X	
Psychological care area.	X	
Institutional plan for tutoring.	N.A.	
Promotion of the teaching of Mexican Sign Language.	N.A.	

Table 1 Diagnosis of spaces and programs for the care of visually impaired people. (N.A.= Not applicable)
Source: Project Collaboration Team. 2019

Once the opportunities to improve the physical spaces were detected, the problem of improving the common spaces for the care of visually impaired people was addressed in a strict sense. One of the many obstacles that visually impaired people have to overcome is the access to the buildings on campus. This includes stairs without signs; very narrow entrances in some rooms and doors with a hydraulic arm; corridors with broken floors; bathrooms that mostly do not contemplate the technical specifications established to make them accessible and appropriate for people with disabilities; among others. The multidisciplinary team that participated in the proposal made a relevant strategic planning of improvement actions to be implemented, these proposals were presented to the ITVH authorities as an impulse to benefit the students who require it.

Results

As an implementation proposal for the inclusion of visually impaired people in the study context, the following strategies are proposed:

a. To design diverse prototypes, that serve as support for the blind users or visitors, considering the decrees established in the Manual of Technical Norms of Accessibility for People with Disabilities.
b. Disseminate in various academic forums and the website of the Technological Institute of Villahermosa, the benefits of the program, and present the prototypes
c. The Information Center is considered the model for the implementation of the prototypes, so the signaling prototypes for the location and orientation must be initiated and placed from the different accesses to this place.
d. Elaboration of posters with the Braille System, so that blind people have data or information that allows them to locate themselves in space.
e. Complementary activities aimed at raising awareness among students for the integration of people with disabilities.

The prototypes that were designed as part of the Initial Education Program for the Inclusion of People with Disabilities are an important development for the Technological Institute, since it means advancing in the social inclusion of the vulnerable population, whether they are students or any occasional transit person. The important thing is to start providing the necessary conditions so that they can access the campus. It is intended that the proposal will impact and even eliminate the architectural barrier presented by the standard designs of technical accessibility.

Contributions of the deliverables

Based on an analysis of the proposed implementations and the impact as an opportunity for improvement, the aspects of functionality and degree of innovation of each of the contributions made are detailed.

a. Key routes or walkways for orientation and access to buildings. This consists of placing a standard guide for the visually impaired on the pavement of the walkers, allowing blind people to walk and move around all the areas they require. All according to the measures and specifications that mark the Manual of Technical Norms of Accessibility.
b. Support signs, to identify the buildings, made of adhesive vinyl or acrylic. Indicating the name of the area or place. The legend must be written in Spanish and in Braille. Likewise, they are adequate to the measures and specifications that mark the Technical Standards Manual of Accessibility.

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c. Awareness posters, on How does it help blind people? This consists of placing in a visible way information for the users or visitors of the Information Center, on how we should correspond to the needs of a blind person. They are also made of adhesive vinyl or acrylic, so that their quality is durable.

d. Inclusive Education Day, whose main objective was to disseminate the program of inclusive education through life experiences that motivate positive actions in the educational and social environment in favor of the integration of people with disabilities.

The following are some advantages and disadvantages of the key routes model proposed for installation within the institution:

Advantages	Disadvantages
As an inclusive and integral institute, it contributes to the implementation of a support system for all visually impaired people, giving ITVH a better position in terms of its quality and inclusion system.	Approval of a budget is required for the purchase of materials needed to implement throughout the technology.
It is proposed that the design and elaboration be done by ITVH students themselves, contributing significantly to the reduction of labor costs.	As they are carried out by ITVH students themselves, there is a risk that the deadlines for their execution will be extended.
As it is made of slabs, which can be fixed to the floor, its installation is easier without having to modify all the spaces.	In order for the project to move forward, there is a need for students and support staff to help with the labor.
The slabs are made to be installed indoors and outdoors which supports rain, sun and air factors.	The use of epoxy luminescent paints would increase the project cost due to its high market price.
The use of plastic cuttings replaces engraving, which decreases its cost, material use, and sustainability by reusing polluting materials.	It takes at least 15 days to make a fully finished slab, which requires a good number of students (labor) to have more slabs prepared.

Table 2 Advantages and disadvantages of the prototype of key routes proposed for the ITVH
Source: Project Collaboration Team. 2019

The details of the models of: prototype of key routes, support signs, awareness posters and inclusive education day, allowed to generate evidence of the deliverables that were made to the authorities of the Technological Institute of Villahermosa.

Name: Prototype for key routes
Description: Made of cement or slabs, designed to be reinforced and fixed to the floor, with plastic cuttings (PET) in place of the engraving. Dimensions and specifications recommended in the Accessibility Technical Standards Manual
Evidence of the deliverable


Table 3 Characterization of the prototype of the key routes proposed for the ITVH, for the inclusion of visually impaired people
Source: Collaboration team of the project. 2019

Name: Supporting Signs
Description: Designed to identify buildings and common spaces, made of adhesive vinyl or acrylic. They indicate the name of the area or place, written in Spanish and Braille. Dimensions and specifications indicated in the Accessibility Technical Standards Manual.
Evidence Of The Deliverable


Table 4 Characterization of the support signs proposed for the ITVH, for the inclusion of visually impaired people
Source: Collaboration team of the project. 2019

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Name: Awareness Posters
Description: Designed in Adobe Fireworks and made of adhesive vinyl or acrylic. Dimensions and specifications indicated in the Accessibility Technical Standards Manual
Evidence of the deliverable


Table 5 Characterization of the awareness posters proposed for the ITVH, for the inclusion of visually impaired people
Source: Collaboration team of the project. 2019

From a social aspect, this proposal will be equally useful to continue offering a quality educational service safeguarding integrity by building a path type gap for people with visual impairment and signs written in Braille

Conclusions

In view of the questions raised at the beginning of this document regarding the actions and suitability of the infrastructure of the institute, it can be concluded that actions such as those to promote an inclusive education in the institutions, implies a change of philosophy in education, which makes it possible to understand that all students have the right to the opportunity to be trained in the professional field and be part of the intellectual capital with the same opportunities for growth, development and competitiveness.

As part of the actions aimed at an inclusive educational institution, it should open the way to awareness, not only from the curricular plan, but from the educational services it provides, considering of vital importance the architectural accessibility, because it depends on it to generate security and independence to people with visual impairment.

In this sense, we consider that there are many opportunities for improvement. While we recognize the progress in the construction of ramps, a building with an elevator, bathrooms and classrooms with ideal characteristics to serve people with disabilities, there are more buildings with a conventional construction. The aspect of architectural accessibility is not only the ramps, but also the conditions in which the floors are, the drains (without grids or deteriorated) to avoid falls due to flooding or muddy parts, the signaling of buildings and safe paths for daily traffic, are part of the common space for visitors and blind and visually impaired users.

Above all, for the visually impaired, being in a different place, with unknown dimensions and orientation generates anxiety and insecurity, as they become familiar with the site; the signage provides valuable information for the integrity of the person and elements such as signs in Braille and writing system, will facilitate their movement and displacement outside and inside buildings, providing a reliable and friendly environment. One of the contributions of this project are the tactile pruning slabs for the creation of the key routes or walkways for orientation and access to the buildings.

These are placed in reflective yellow, can be assembled and fixed to the ground, and their installation is easier without the need to modify all the spaces; these slabs are made to be installed indoors and outdoors, which withstand rain, sun and air factors. They are also environmentally friendly, because plastic cuttings are used instead of engraving, which reduces their cost and contributes to sustainability by reusing polluting materials.

Therefore, it is feasible to make adjustments, using other resources that allow us to provide our educational service considering the diversity.

We hope that ITVH will allow us to give continuity to the actions aimed at the inclusion of people with disabilities, and that this project will go beyond our school.

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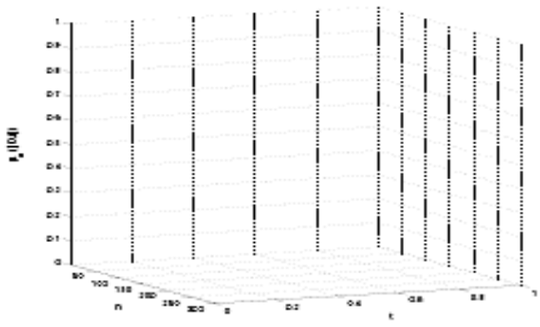

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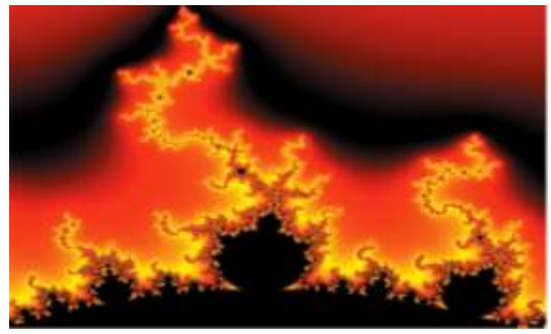

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