Mapping and Revitalization of the Libraries of Santa Catarina and San Pedro Garza García in Nuevo León, Mexico

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Abstract
Libraries' architecture is fundamental in shaping a community's knowledge and culture. Their design, when thoughtful, has a significant impact on creating dynamic environments spread across cities and optimizes the functionality of the space, contributing to the creation of informed, connected, and culturally enriched communities. Adapting libraries to modern needs and using technologies that are easy to navigate are priorities in Mexico. The impact of evolving educational and research spaces can allow future generations access to the richness of knowledge accumulated over time, fostering local engagement. With the ease of getting lost in the routine of today's accelerated life, changing a community's vision can be challenging. Still, reactivating libraries through their architecture can reshape the community's lifestyles. This article aims to show the mapping process, the analysis, and the comparison libraries in Mexico's Santa Catarina and San Pedro Garza García to establish a spatial proposal regarding the enrichment libraries provide to the surrounding communities.
Keywords: libraries and communities; reactivation; enrichment spaces; consultation rooms; research spaces.

1. Introduction

Public libraries have become much more than repositories of books; they are evolving into dynamic spaces that enrich the lives of citizens and strengthen communities. One of the most significant ways libraries achieve this enrichment is by democratizing knowledge. Unlike bookstores or private institutions, libraries offer free and equal access to information for all, regardless of socio-economic background. Libraries empower individuals to learn new things, pursue their interests, and actively participate in society. Libraries become the great equalizer, ensuring everyone has the opportunity to expand their knowledge and understanding of the world. As claimed by Suaiden, E. J. (2002), the capacity for immediate access to information and its consequent possibility of being transformed into knowledge, generating products, services, and wealth, was responsible for the paradigmatic change that generated the technological revolution we are experiencing. Libraries must adjust to these changes.

According to Gallego (2016), the public library, the center of culture and scenario of knowledge access, presents an appropriate space to provide the first readers with the tools to approach culture and society. Beyond offering a wealth of information, libraries also serve as crucial support systems for education. They provide resources and programs that complement formal education, such as after-school tutoring, homework assistance, and access to educational databases. This support doesn't stop at formal schooling; libraries are vital for lifelong learning, offering resources for professional development, personal hobbies, and self-improvement. Whether someone is looking to learn a new skill, delve into a specific topic, or explore their interests, libraries provide the tools and resources to embark on that journey. The positive impact of libraries extends beyond individual enrichment. They function as community hubs, fostering a sense of belonging and connection. Libraries offer gathering places where people can connect with others, participate in social events, and build relationships. These places are significant for those feeling isolated or lacking a solid social network. Book clubs, discussion groups, and community events held at libraries provide opportunities for interaction and a sense of shared purpose.

Furthermore, libraries enrich communities culturally. They offer diverse materials, from books and magazines to films and music, exposing individuals to different cultures and perspectives. The entire environment broadens horizons and fosters understanding and appreciation for the richness of human experience. Additionally, libraries often host cultural events such as author talks, exhibits, and workshops. These events enrich the lives of individual participants and contribute to the community's overall cultural landscape. Finally, libraries play a crucial role in bridging the digital divide. Free access to computers and the internet empowers individuals to connect with loved ones, access online resources, and participate in the digital world, even without personal technology. Those places ensure that everyone can reap the benefits of the information age and participate fully in modern society.

Understanding user motivations is another crucial area of ongoing research. We know libraries offer many benefits, but a deeper dive into why people use them is needed. What specific needs or desires draw them in? Are they seeking access to technology, a space for social interaction, or a quiet haven for focused learning? Additionally, research on non-users is equally essential. Understanding the barriers that prevent some citizens from utilizing this resource can help bridge the gap and improve outreach efforts, ensuring everyone feels welcome and benefits from the library's offerings.

Optimizing library design and services is another area that is ripe for further investigation. While the importance of thoughtful architecture is recognized, more research is needed to pinpoint the optimal design elements that create the most enriching library experience for diverse user groups. Similarly, libraries strive to cater to a wide range of needs, but optimizing services for specific populations requires further exploration. How can libraries best tailor offerings and outreach to ensure everyone feels welcome and benefits from the resources available, whether they are working adults, immigrants, or seniors?

By addressing these knowledge gaps, we can better understand the multifaceted ways libraries enrich communities. The knowledge will allow us to refine strategies and maximize libraries' positive impact on citizens' lives, ensuring they continue to serve as vibrant hubs of learning, connection, and cultural exploration for generations to come.

The research is descriptive and aims to make recommendations for future library development in Mexico, emphasizing the importance of thoughtful architecture to strengthen communities, is taken. Libraries serve as cornerstones of knowledge and culture within a community. Their architectural design shapes these elements, fostering dynamic environments that promote learning, connection, and cultural enrichment. This study aims to analyze and compare libraries in Santa Catarina and San Pedro Garza García, Mexico, to explore how their design impacts their surrounding communities.

2. Overview

In the ever-evolving landscape of information access, libraries have transcended their role as mere repositories of books. They are transforming into dynamic cultural centers, fostering learning, connection, and a sense of community belonging. At the heart of this transformation lies an overlooked critical element: architecture. The deliberate design of libraries shapes user experiences, influences accessibility, and ultimately plays a significant role in shaping the knowledge and cultural landscape of the surrounding community. On the other hand, Leal, J. (2018) says that is important to develop the visual sensibility to learn to see the expressive qualities of elements surrounding us. Libraries and art help educators cultivate aesthetic attitudes and improve cognitive abilities.

The concept of libraries as vibrant hubs of knowledge and culture is not new. Historically, libraries have served as centers for intellectual discourse, social interaction, and inspiration. From ancient Alexandria's grand halls to today's modern learning commons, architecture has played a crucial role in shaping these spaces. Well-designed libraries offer a sense of sanctuary, promoting focused learning while fostering a sense of community through open spaces and collaborative areas. Conversely, poorly designed libraries can be uninviting and hinder accessibility, creating a barrier between knowledge and the community it aims to serve.

This study delves deeper into this intricate relationship between library architecture and community engagement. Focusing on Mexico's Santa Catarina and San Pedro Garza García, two distinct municipalities presenting unique socio-economic profiles, the research aims to analyze and compare the spatial design of their respective libraries. By examining these contrasting environments, the study seeks to understand:

- How do design choices within each library cater to their communities' specific educational, cultural, and technological needs?
- In what ways does each library's physical layout and atmosphere promote engagement with knowledge and encourage interaction among community members?
- How do libraries utilize technological advancements to offer seamless access to information and create dynamic learning spaces for future generations?

This study aims to paint a comprehensive picture of the libraries' impact on the surrounding communities through a mixed-method approach employing site visits, document analysis, and interviews. By dissecting the strengths and weaknesses of each architectural approach, the research will culminate in a spatial proposal for library design. This proposal will serve as a blueprint for future library development in Mexico, emphasizing the critical role of thoughtful architecture in nurturing vibrant, informed, and culturally enriched communities. According to Cuadros Rodriguez (2013), libraries must promote participation, appropriation, and involvement of communities in their dynamics and projects, with a perspective of universality that encourages inclusion and puts aside social biases and differences.

As our world increasingly relies on digital access to information, the physical space of a library might seem less relevant. However, this study argues that libraries have the potential to be more vital than ever. In an age of constant digital stimulation and accelerated lifestyles, libraries offer a unique opportunity for respite, focused learning, and meaningful community interaction. By embracing the power of thoughtful and user-centric architecture, libraries can evolve into true community hubs, shaping how we access information and learn, connect, and engage with the world around us. This research seeks to contribute to this evolution, ensuring that libraries continue to serve as vibrant beacons of knowledge and culture within the ever-changing social fabric of Mexico.
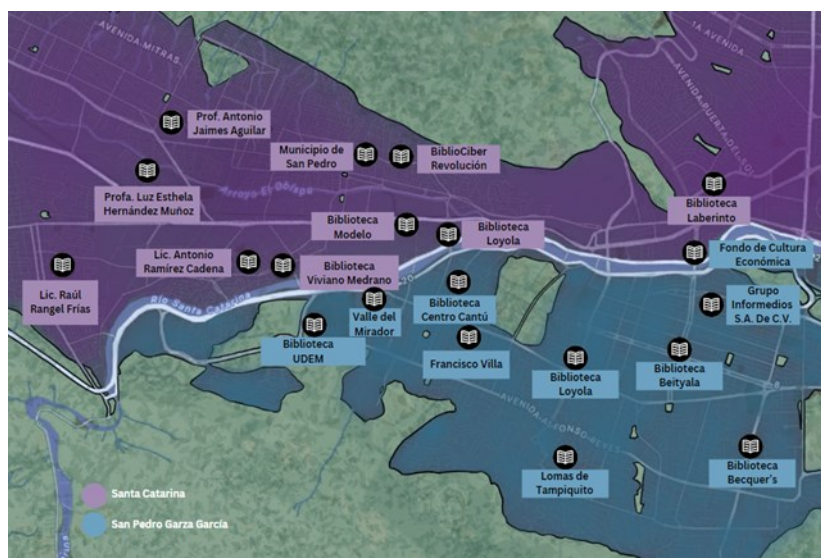
2.1. Libraries in México and Nuevo León

Currently, in the country of Mexico, according to the National Network of Public Libraries, coordinated by the General Directorate of Libraries of Conaculta, Mexico has 7,363 public libraries in the country (Presidencia de la República EPN, 2013).

According to INEGI, Nuevo León has a total of 5,784,442 people (INEGI, n.d.), of which the municipality of Santa Catarina has a total of 306,322 people, and the city of San Pedro Garza García has a total of 132,169 people (INEGI, 2020).
According to information provided by the Government of Mexico, within the Cultural Information System, the state of Nuevo León has a total of 312 libraries, of which the municipality of Santa Catarina has 29 of the total of 312 libraries, which is 9.29% libraries in Nuevo León. On the other hand, the San Pedro Garza García municipality has 12 libraries in its territory, a total of 3.85% of the libraries in Nuevo León (Government of Mexico, 2021).

3. Material and Methods

To get a well-rounded picture regarding how public libraries influence spaces of enrichment in the lives of the citizens of Santa Catarina, Nuevo León, a method based on qualitative (subjective indicators) approaches, was employed to analyze their spaces. The questionnaire targeted the community members of each municipality: Santa Catarina and San Pedro Garza García. The survey was applied to members of different age ranges and genders, always seeking to maintain a balance between the selected audience to get to know perspectives and opinions.

The interviews were conducted in two formats: with visitors and library workers. In the case of the workers, the focus was on their experience as daily users of the space and as witnesses of the user-space interactions of the visitors. In this way, information can be obtained from someone who observes users' reactions, what works, and what could be improved. The responses regarding uses and activities varied between educational and recreational activities. Site visits consisted of firsthand observation of the chosen libraries in Santa Catarina and San Pedro Garza García. The visit examined the physical layout, spatial organization, technology integration, and atmosphere. Existing documents, such as architectural plans, library reports, and community surveys, will be analyzed to gain insights into the design rationale and community needs. Interviews with librarians, staff, and community members were conducted to understand user experiences and perceptions of the library's impact. The collected data was analyzed thematically to identify critical patterns and relationships between the architectural design and the impact on the community. Comparisons will be drawn between the libraries, highlighting how their design choices influence their role within their respective communities.

Map 1. Fraire, A (2024)

3.1. Delimitation of the study area

The study covers the analysis of libraries in Santa Catarina and San Pedro Garza García municipalities since it was interesting how, despite being neighboring municipalities, they present very different characteristics in their respective contexts. On map 1, we can see the current libraries in both municipalities. (Santa Catarina in violet and San Pedro Garza Garcíain blue.

3.2. Main characteristics of libraries in San Pedro

Lomas de Tampiquito Library, located in San Pedro Garza García, is the selected case study as the best example of what one, as a community member, expects when entering these knowledge spaces. One of its primary purposes is to provide free internet to young students in the community so that they can have free access to their online classes.

It is a one-story library with a mezzanine level whose program is divided into a general room in which, upon entering, you are greeted by a collection of approximately 700 classified books and about 300 donated books, high tables with benches that can accommodate 32 people; a playroom equipped both spatially and technologically where courses and workshops for children; a multipurpose room and two bathrooms. The library's collection is updated as it receives new material periodically according to user needs.

The architectural design is efficient since, upon entering the library, the user is greeted by an atmosphere of tranquility and concentration conducive to exploring knowledge. A key aspect of creating this space is lighting. Two main functions were determined: natural lighting and reading lighting. The first aims to provide general lighting throughout the library to ensure good vision when moving around the space and to locate material on tables and shelving areas. The library features LED panels that emit ambient diffused light, creating a comfortable atmosphere. On the other hand, the lighting for the areas intended for reading and study has focused lighting to prevent visual fatigue and facilitate concentration.

Other groups that are attracted to activities in the library are elderly adults who form a group in which they develop a project with a specific theme each month and use the library facilities as their interaction center because it transmits security to them. They feel invited to create within the space.

The space has technological adaptations suitable for research and task completion, providing this service to users who may require it for greater ease in carrying out their work.

Images 1-6. Public library Lomas de Tampiquito, San Pedro Garza García. Pictures Fraire, A. 2024

3.3. Main characteristics of libraries in Santa Catarina

Various variables influence the problems of the success of libraries in terms of the impact they have on the lives of the citizens of Santa Catarina and San Pedro Garza García. Without a doubt, the lack of impact on the lives of citizens is not entirely caused only by problems with the architecture of the place but also by problems with dissemination. Libraries do not frequently use current marketing platforms like social networks. Although some campaigns have been presented to promote good reading habits, they have not been successful, given the constant changes that occur today. People are on social media to stay updated on what is happening around them. Creating a library profile or page might have better results. Some examples of publications could focus on the architecture of the space, the benefits of their distribution, and perhaps some testimonies of the good results that have been achieved.

As for walkability, the sidewalks in the area are not in the best condition since they are in poor or fair condition. Possibly, being the access roads to the establishment, they cause problems or are seen as obstacles or negative factors that prevent citizens from visiting the libraries. Also, it may be because of the environment they create. There are not enough views from the outside. Making library users feel that the space is one with the outside, rather than a single closed block, can create a calmer atmosphere that conveys relaxation motivation, and inspires reading. For this reason, it is vital to define views to frame through the windows considering the reading spaces.

The materials used to construct a building are crucial to properly regulating conditions such as temperature. Materials make the spaces, in this case, the libraries, comfortable for users. Considering that both Santa Catarina and San Pedro are places where high temperatures predominate, and in the coming years, they are expected to increase, the walls and the slab must consider insulation systems, double glazing, or shading strategies as part of the building design. Given the location of the libraries, uncomfortable hours predominate given the high temperatures, so design strategies must be applied, such as ruffles in the windows where the sun affects the most, such as the west, south, and this. Furthermore, temperatures are increasing, so the design must allow adaptation to new scenarios designed for the future. Also, the most predominant winds are those coming from the east, so cross ventilation could be used to ventilate the library's interior and make it feel more comfortable when reading since this activity will require long hours of occupation.

4. Results and Discussion

Table 1. Indicators.

Study case	San Pedro Garza García	Santa Catarina
m2 Indoor surface area	40	48
Number of rooms (N)	5	3
Outdoor surface area	0	0
Capacity of occupants allowed at the same time (O)	75	3
Occupants age	04 – 85	07 – 62

The municipality should attempt to improve visuals and urban quality in cultural centers to increase the use level. Only the visible spectrum of solar radiation is considered for windows and glass. They are considering the angle of incidence of solar radiation so that the window overhang strategies ensure that less sunlight enters the home and is reflected. The most crucial hours are from 11:00 am to 2:00 pm. The lower the angle of the sun, the more radiation the glass transmits, clearly depending on the orientation of each façade.

The strategies applied to the new design allow for controlling solar gains, reducing AC usage, and allowing passive heating in winter. Those with fixed shading have the most significant advantages in terms of temperature regulation. As for the furniture, it is evident that it is not in the best possible condition. It is a little worn due to the number of years it has served users and does not provide the best possible comfort.

The redesign should consider the local vegetation focus on the orientation of the building, which blocks the sun in summer, but when it loses its leaves in winter, it lets sunlight through. Also, crossed ventilation should be applied to consider air inlets and outlets to allow circulation that, according to the wind analysis, comes from the southeast. Regarding ventilation, the purpose was to maintain adequate temperatures, reduce energy consumption, and prevent suffocation, odors, and CO_2 from escaping to allow "cleaning of the air."

5. Conclusions

As mentioned at the beginning of the article, the research is descriptive, intending to map the current situation of the libraries in Santa Catarina and San Pedro Garza Garcia in Nuevo León, México. The objective is to diagnose the daily problems faced by the libraries in these municipalities and then develop a series of management suggestions. In a second phase, a strategic architectural intervention plan will be created that allows the accommodation and adjustment of the different spaces; however, this process will be executed with citizens to implement a participatory and inclusive methodology in the redesign. This study holds the potential to demonstrate how libraries can be designed to become vibrant hubs of knowledge and culture, fostering informed, connected, and culturally rich communities. By analyzing existing libraries and developing a spatial proposal, this research will contribute to a deeper understanding of the role of architecture in shaping a community's relationship with knowledge and learning.

Finally, the future of libraries themselves remains a topic of ongoing inquiry. The information landscape constantly evolves with the rise of ebooks, online learning platforms, and social media. Understanding how these trends impact library use and how libraries can adapt to remain relevant in the digital age is crucial. Additionally, funding models for libraries are constantly under pressure. Research into innovative financing strategies is essential to ensure libraries have the resources to maintain their role as vital community assets in the ever-changing world.

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Conflict of Interests
The author declares no conflict of interest.

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