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# Radio, library, and storytelling: Building an information system for indigenous community development in Chiapas, Mexico

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## Abstract

The Tseltal Maya are an indigenous people living in the highlands of Chiapas, Mexico, with about 500,000 speakers of the Tseltal language. The encroachment of the dominant Mestizo culture and Spanish language is accelerating as access to the Internet increases, threatening the loss of Tseltal language and cultural heritage. We collaborate with local partners to create the first Tseltal indigenous information system, which includes a community library, a community radio station, and storytelling to document lived experiences and development impacts. The information system is anchored to Tseltal indigenous notions of well-being or *Lekil Cuxlejalil*, which conceptualizes living well as living in harmony with self, family, community, environment, and spirit. Building a holistic Tseltal information system requires engaging local stakeholders and indigenous leaders to identify ways to organize, disseminate, generate, and conserve information to achieve broader goals of strengthening and preserving Tseltal language, culture, and identity, while promoting endogenous development based on culturally appropriate notions of well-being, in harmony with self, family, community, environment, and spirit.

### KEYWORDS

developing countries, indigenous knowledge, information seeking and use, libraries, social change, threatened languages

## 1 | INTRODUCTION

The Tseltal Maya is one of over 25 Maya peoples native to southern Mexico and Guatemala. The Tseltales live in the rural highlands of Chiapas, Mexico's southernmost and poorest state. With over 600 communities and roughly 500,000 Tseltal speakers, the Tseltal territory has limited infrastructure, and most communities lack access to secondary education; however, they are resilient and committed to preserving and strengthening their rich cultural heritage, language, and well-being. There is something quite unique in the holistic way Tseltales define well-being or *Lekil Cuxlejalil* in Tseltal language, as living fully and in harmony. For Tseltales, living in harmony is a key: "Harmony is an essential value for the daily life of the Tseltales. It is to be able to live in harmony at all levels, from the self to family, community, heaven, nature, and to have harmony in the heart, without ruptures or divisions. This means, to live with one single heart. This is a value that has been transmitted by the grandparents, and that is reflected in the sacred book of the cosmogenesis of the Maya, the Popol Vuh" (Modos de Vida, CAEC & ECOSUR, 2016, cited in Gomez, Moreno, et al., 2017b, p. 13).

This paper discusses an information system developed with local Tseltal organizations and community leaders in Chiapas to help promote indigenous endogenous development and strengthen the rich cultural heritage and language of the Tseltales, in ways that honor and respect their traditional notions of well-being and harmony.

Article 11 of the United Nations Declaration on the Rights of Indigenous Peoples states: "Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations

of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature." Furthermore, Article 16 declares, "Indigenous peoples have the right to establish their own media in their own languages and to have access to all forms of non-indigenous media without discrimination." (United Nations Declaration on the Rights of Indigenous Peoples, 2008). The Tseltal information system is intended to help support these indigenous rights through the creation of a holistic indigenous information system that protects and promotes the Tseltal cultural heritage and supports the locally led endogenous development projects.

According to One Equal Heart (2015), endogenous development is a change that improves the well-being of communities based on the community's criteria for development. Endogenous development takes into account not just material or economic well-being but also social, cultural, and spiritual well-being and seeks to harmonize well-being of the community with well-being of the environment. In short, local people drive endogenous development, not outsiders, in processes that are initiated by communities, that mobilize and harness local resources, and that retain the benefits of development within the community (One Equal Heart [OEH], 2015). According to the Vásquez-Barquero and Rodríguez-Cohard, endogenous development is a multidimensional process that involves the following: (1) an economic dimension characterized by a specific production system that allows local entrepreneurs to use the productive factors efficiently, introduce technological change and innovation, and reach productivity levels all of which make them competitive in the national and international markets; (2) an institutional dimension where economic and social factors are integrated into a system of institutions that create a complex network of relations, which incorporates social and cultural values into the development process; and (3) a political dimension, instrumented through local initiatives with multiple objectives (Vázquez-Barquero & Rodríguez-Cohard, 2016, p. 1137).

Using these notions of endogenous development, we developed and tested an information system with Tseltal communities to support and strengthen not only indigenous language and culture but also community development. The Tseltal information system included three related components: (1) improve the programming of an existing community radio station that broadcasts in Tseltal language, (2) create a new documentation center (future community library) to collect, organize, and preserve a scattered collection of Tseltal language printed materials, and (3) use visual storytelling to document and collect evidence of impact of the different development initiatives in the community. These three elements comprise the beginning of a Tseltal information system for indigenous development that channels global information technologies in ways that strengthen endogenous development. The challenge in this tension is finding ways to honor and respect local culture and traditions, while incorporating newer information systems and technologies in support of locally defined initiatives for community well-being and endogenous development.

This work was conducted in 2016 to 2018 by faculty and graduate students at the University of Washington Information School, working at the invitation of One Equal Heart in Seattle and in partnership with Center for Indigenous Rights (CEDIAC) and Center for Educational Support to the Community (CAEC), both nonprofit organizations affiliated with the Jesuit Mission of Bachajón, in Chiapas. These nonprofit organizations support Tseltal communities by engaging their leaders, in particular women and youth, to promote endogenous development in three major areas: growing food and building economies, advancing rights of women and children, and strengthening language and culture. CEDIAC's and CAEC's staff is organized into working groups (called *yomoles* in Tseltal) that interface directly with Tseltal community leaders (locally called *cargos*) who are active in the organization's various development initiatives. Members of the *yomoles* actively participated in our work to build a uniquely indigenous information system.

In the remainder of this paper, we present each of the components of the Tseltal information system for indigenous development: radio, community library, and visual storytelling. In each case, we review similar initiatives in other development contexts, and we discuss their deployment in the Tseltal context. We then discuss their contributions and limitations, and we conclude with a discussion of the value of information systems for community development from an endogenous development perspective, based on the lessons from the Tseltal information system in Chiapas, Mexico.

## 2 | TSELTAL COMMUNITY RADIO STATION, ACH' LEQUILC'OP

Around the world, community radio serves as an integral source of information and means of community network, particularly in rural and indigenous communities. For example, in Nepal, the indigenous Danuwars, despite their extremely low literacy rates and high degree of marginalization, started a Doné Bhasa program in 2007, broadcast by Radio Namobuddha to serve as a means for sharing information and empowering communities. Before the radio was established, the Danuwars "did not have any media presence, and their language was on the verge of extinction" (Dahal & Aram, 2013).

Just as community radio technologies can serve to empower individuals, so do technologies have the potential to preserve language, especially if those technologies have the capability of disseminating information on a mass scale. A case study on the Australian Aboriginal Awarbukarl community showed that the development of software tools for analyzing language was critical to documenting and revitalizing that language. In developing database software tools for language analysis, Awarbukarl community members implemented a form of language data repository, with components that included a multimedia dictionary and an indexing system that keeps records according to not only linguistic but also cultural features (McKinney, Hughes, & Arposio, 2007).

Moreover, scholars have also found that information and communication technologies can serve as a "method to immortalize and teach cultural knowledge and language for indigenous populations" (Van Der Meer, Smith, & Pan, 2015). Dahal and Aram further noted that "when the Indigenous Peoples are provided with the opportunity to create their own media it will not only help them to preserve their language and culture,

but also allows them to create their own history in their own terms" (Dahal & Aram, 2013). Scholars researching indigenous radio usage and implementation acknowledge that for some, radio was the "only available media for this type of virtual interaction, and for many, literally the only way through which to recognize their social environment in a way which goes beyond the limits of their immediate community and those nearby" (Rodriguez, 2005). Furthermore, radio station broadcasts extend beyond spatial limits, ultimately contributing to the cohesion among peoples and communities, reinforcing identity and affinity.

Radio is not only a highly effective but also a very cost effective way to transfer knowledge on a large scale and in fact, a preferred method for poverty-stricken communities. For example, the Equipo de Comunicación Mapurbe in Argentina has limited access to infrastructure and technology (Cárcamo-Huechante, Legnani, Sommer, & Sanin, 2010). Given these limitations, Equipo embraced the idea of "micros," a "series of 3- to 5-minute radio programs." Micros are an economically feasible way to rent airtime from different radio stations within a limited operations budget. Micros are effectively crafted, condensed segments that portray aspects of the community's culture in a few minutes, "mixing ancestral legends, family narratives, personal and collective stories, music, and political platforms." A communications strategy based on limited time slots using the micros requires Mapurbe broadcasters to continuously be on the lookout for other radio opportunities, including expanding coverage and reaching more regions in their territory.

For the Tseltal community in Chiapas, Radio Ach' Lequilc'op (https://achlequilcop.org/) is an important tool to help strengthen Tseltal language and culture; it is also important for community education, engagement, and participation. Radio Ach' Lequilc'op received a broadcasting license in 2014; it was one of the first indigenous community radio stations to receive a community radio broadcasting license in Mexico. The station was then inaugurated in 2015, using the equipment passed down from Iberoamericana University, a private Jesuit university in Mexico City. It broadcasts about 18 hours per day using a 1-mW transmitter perched on the top of a mountain near Bachajón, Chiapas. Its signal reaches about 45 km away from the antenna, with an estimated audience of about 40,000 in the surrounding Tseltal and mostly rural communities. A community audience study we conducted in 2016 revealed that about 85% of people in communities near the town of Bachajón listen to the radio and watch TV. But most Tseltal communities are located farther away from towns like Bachajón, with limited electricity, TV, or cell phone signal. For these communities, community radio is a lifeline of information to the rest of the world.

David Pérez Oleta was the coordinator of radio programming at the time of our study. He pointed out:

> The community radio is formed by a network of volunteers who are elected in and by their communities (with a radio staff of) two full-time people and two who work more than half-time. Content for radio programming is collected in the communities, and through the programs (of the Jesuit Mission, CEDIAC and CAEC), and the production work is carried out by volunteers under the direction of the base team. We attend training courses, Ts'umbal (Tseltal clan) gatherings and interregional meetings to seek additional content for radio programs. We are sustained by the support of the communities and donations; we are a noncommercial radio. (David Pérez Oleta)

Although radio is broadcast primarily in Tseltal, there is growing interest in broadening this to include more programming in Spanish. This interest reflects a new generational wave with bilingual needs and preferences and creates an opportunity for community radio to bridge the two languages and generations. But it also raises the question of how supporting the two-language system can serve to strengthen and preserve indigenous language and traditional knowledge. There is also an ongoing tension about the correct balance between music versus talk and news shows and a tension between religious and nonreligious programming. These tensions reflect the management and oversight of the radio, which started with a top-down control from the Jesuit Mission and a council of Tseltal elders and is transitioning to a more bottom-up (endogenous) perspective for the radio, in keeping with its legal status as a "social indigenous concession" from the Federal Telecommunications Institute (IFT) in Mexico.

## 2.1 | Making radio is an empowering process

Radio Ach' Lequilc'op (Figure 1) is an education process in itself, and making radio is not always easy, as expressed by youth radio volunteer Xun López Guzmán:

> As radio broadcasters, sometimes it is difficult for us when we go out to gather information or when we do interviews because sometimes we do not know how to pose the questions correctly. In addition, we do not know how to use the recorder well and there are times when it is difficult for us to get the information out of embarrassment or fear. (Xun López Guzmán)

In building the Tseltal information system, we engaged the professional services and partnership of Mauricio Beltran, from Corporación SIPAZ in Colombia, a community radio consultant and trainer with over 30 years of experience. Mr Beltran has provided targeted training, capacity-building, and strategic consultations to increase youth participation, diversify the types of programming, improve the quality of programs, and strengthen the connection between the radio programs and the endogenous development activities promoted by the Jesuit Mission, CAEC, and CEDIAC. For example, as a result of our work, each program and development activity working group designated youth correspondents to participate in the radio and representatives to serve on a newly created radio editorial committee that oversees content production and programming. For the youth radio correspondents, their participation is in itself a source of empowerment. Radio correspondent Angélica reported the impact from this new structure: "From the moment I started the workshop, I really liked interviewing various people, knowing about the things that happen in the different communities because they do many things that are important to us" (Angélica Pérez). Moreover, Tseltal

**FIGURE 1** Ach' Lequilc'op Community Radio Station (photo R Gomez)

community leader Amalia Hernández Gómez, the current coordinator of the station, shared her perspective about the link between radio and the empowerment of women:

> *Making radio with a focus on gender means talking about women, highlighting their social protagonism and promoting their identity as subjects with rights and duties. It means expanding our communication horizons to be mediators and facilitators of the word; generating an equal presence of men and women. That is why as Radio Ach' Lequilc'op radio announcers we are working and strengthening gender equality in our programming. (Amalia Hernández Gómez)*

The community radio is an essential part of an information system, especially in a rural, indigenous region. In Chiapas, the community radio functions as an autonomous component of an interconnecting network and as a method for integrating, disseminating, generating, and preserving information content. With the library located feet away from the radio station, exciting synergies are created by linking the radio to the library program. The library provides an information framework for organizing, cataloging, and storing radio archives in its collection. In this way, the library starts to include a growing collection of digital audio and visual materials, in addition to printed ones.

In the same way, the radio staff and volunteers employ storytelling techniques learned as part of their training as an important vehicle for generating and disseminating information that flows through the system. Through gathering news and testimonies for programming, the radio team increases community participation in creating meaningful and relevant content. This content in turn opens up new information categories and topics to be incorporated into the library's catalog system. In the next section, we discuss how the library plays a vital role within an indigenous information system.

## 3 | TSELTAL HOUSE OF WISDOM: SEEDS OF AN INDIGENOUS COMMUNITY LIBRARY

The second component of the Tseltal information system is a small documentation center, locally known as the Tseltal House of Wisdom (Figure 2), the beginnings of a future indigenous community library. Tseltal culture and language are mostly oral, with written records starting only in the last 60 years, with the arrival of the Jesuit Mission and the translation of the Bible to the Tseltal language. The Bible and associated pastoral and religious materials were the first locally published written works in Tseltal. About 15 years ago, this body of information began to grow when the Jesuit Mission and its nonprofit affiliates CEDIAC and CAEC realized that the reach of development projects could be extended well beyond the staff through the Tseltal *cargo* system. The *cargo* tradition is arguably an information system embedded in the Tseltal culture. Volunteers are nominated by their communities and commit to not only learning information on topics relevant to community life but also to sharing that information with neighbors in their home villages. Training *cargos* necessitated development of written curriculum in the Tseltal language and of appropriate pedagogy geared to the indigenous way of learning (primarily through practice, rather than theory). A productive period of over a decade followed, with a variety of curricula developed for programs in agroecology, human rights, women's rights, health, and entrepreneurship, among others. Numerous brochures, booklets, and training manuals written in Tseltal or in Tseltal and Spanish, in addition to videos, audio recordings, photographs, and a handful of monographs, papers (including this one), theses, and dissertations about the Tseltal people written in Spanish or English created an extensive body of information. However, these materials were randomly distributed in desk drawers, boxes, shelves, and closets, accessible only to those who knew where to look for them. Moreover, there is no library of Tseltal materials anywhere in Mexico (or the world), and the local public libraries have a dismal number of texts in Tseltal language: During our latest visit to the Bachajón public library in 2018, we found just two booklets in Tseltal language. This chaotically housed collection represented a rich lode of information that required organizing principles as unique as its content. The research team set out to develop a Tseltal information system and the world's first library in the Tseltal language, a place to bring together, organize, classify, and store these disparate materials.

**FIGURE 2** Tseltal staff organize and catalog material for the Tseltal House of Wisdom (photo R. Gomez)

There is no word in Tseltal language for "library." Tseltal elders upon reflecting on what a place housing a collective of these existing materials and future works might be called decided on a name "House of the Heart's Wisdom of Our Land," abbreviated to House of Wisdom. By its very existence, the House of Wisdom grants agency and legitimacy to the materials created in the Tseltal context by Tseltal communities. Libraries are frequently a symbol of legitimacy, but the presence of a library is often overlooked or taken for granted. The Tseltal House of Wisdom's very existence reflects "the importance of providing access to indigenous materials (that) has gained increasing recognition in recent years as the global community has awakened to the need to preserve indigenous knowledge in order to preserve the cultural and intellectual diversity of the world" (Gilman, 2006, p. 2).

Historically, libraries have played an important role in preserving history and cultural heritage. Indigenous peoples generally preserve knowledge of their history, cultural heritage, cosmovision, and ancestral lands through mechanisms such as ritual storytelling, visual representations, and symbolic expressions. The idea of a library as a repository of knowledge is outside these traditions. Nevertheless, libraries can serve as an additional mechanism in indigenous knowledge systems to facilitate archiving information and documents deemed necessary and important for strengthening and promoting indigenous culture and endogenous development. When it comes to the cultural heritage of indigenous peoples, Nakata and colleagues noted that

> (I) t is not just merely the collection of objects, stories, and ceremonies, but a complete knowledge system with its own concepts of epistemology, philosophy, and scientific and logical validity. The diverse elements of an indigenous people's heritage can only be fully learned or understood by means of the pedagogy traditionally employed by these peoples themselves, including apprenticeship, ceremonies and practice. (Nakata, Byrne, Nakata, & Gardiner, 2005, p. 17)

Implementing and sustaining an indigenous knowledge system are a complex task, and the risk of misinterpretation and even appropriation runs high. However, the benefits of this work remain clear: Through study and collaboration in the creation and maintenance of indigenous systems of knowledge, we add intellectual diversity, scalability, and replication to the field of library and information sciences (LIS). Ultimately, and perhaps most importantly, we help to stimulate conversations worldwide among and with indigenous peoples and information specialists. But the need for community involvement is critical, as Nakata emphasizes: "Simply recording words or images fails to capture the whole context and meaning of songs, rituals, arts or scientific and medical wisdom. This underscores the central role of indigenous peoples' own languages, through which each people's heritage has traditionally been recorded and transmitted from generation to generation" (Nakata et al., 2005, p. 18).

Accordingly, the opportunity to maintain heritage and indigenous knowledge must be a process that integrates indigenous systems within the LIS field and in practice. Tseltal communities hold and conserve many historical traditions, ceremonies, and practices in collective memory, in practice, and in their hearts. The practice of writing and recording these is relatively recent. Over the past 20 years, the Jesuit Mission and its nonprofit affiliates have generated hundreds of works in a growing collection of educational, liturgical, and cultural materials in the Tseltal language to support their work in Tseltal communities, works that are now being collected, organized, and preserved in the Tseltal House of Wisdom.

The concept of a library is a Western idea. It has also been noted that institutions that are rooted in Western practices struggle to succeed outside of the context for which they were built. For instance, "the indigenous universe is, in general, reticent about (or even contrary to) the institutions that come from the dominant society, since they have been tools of acculturation, oppression and denial of basic rights, over the past centuries" (Civallero, 2007, p. 82). We did not want to repeat this colonialist practice of imposing Western-style libraries on indigenous knowledge, and we frequently raised questions about the need for a library in the Tseltal context. We consistently received two sides of the same answer: Yes, we were repeatedly told, creating a library is important to the community, and there is value in preserving all the materials that exist and in the impact of such collection may have on strengthening and preserving the Tseltal language and culture. And at the same time, we were repeatedly told no, a library is not something that people from the community will care to use much. The library is not expected to have much direct use by indigenous community members, at least not in the near future: Knowledge is shared orally and not in written form (radio is more powerful in this

respect), and people will not necessarily prioritize investing the time, effort, and money to travel to town to visit the library, even if it has useful resources in Tseltal language. Melchorio, a community leader in the village of Pinabetal, told us that they frequently do not have time or money to go to town for medicines for a sick child, so going to the library to look for books or other written materials is completely out of the question. In addition to lack of time and resources, the notion of knowledge living in a room with documents is contrary to the Tseltal worldview. To illustrate this, one of the community elders in the village of Pinabetal regretted how they had made two mistakes in their community:

> The first mistake was when we allowed the Church to build a chapel here, because now people think the only place to find God is inside the chapel walls. The second mistake was when we allowed the government to build a school here, because now many in our community think the only learning that matters takes place inside the school building (Manuel Gutiérrez).

So who uses the roughly 500 works currently held in the Tseltal library? Few people indeed: radio volunteers, community trainers, nonprofit organization staff, and maybe the occasional college student or researcher visiting the region. How then will the House of Wisdom be an effective component of the Tseltal information system and a tool for endogenous development? It is both a symbol and a long-term gamble: A symbol of the value and worth of preserving Tseltal knowledge and culture and a bet that the preservation of all these materials in Tseltal language will be of value to the community, if not today, then in the future.

## 3.1 | A Tseltal library classification system

Our approach to organizing the library collection was based on adapting basic LIS concepts and training local Tseltal staff with the best tools possible, in order to create a Tseltal library and its own Tseltal classification system from the ground up. Classification schemes to house collections frequently run counter to indigenous ideas about how information should be organized, preserved, and transmitted, and library projects often exclude indigenous perspectives.

> "When indigenous information and knowledge is placed within the structure of Library of Congress or Dewey, that information is effectively 'marginalized' because it is outside of the framework prescribed by the 'most powerful discourse'... the result is always the same: indigenous information is rendered inaccessible to users who may search for it using indigenous epistemology and terminology" (Gilman, 2006, p. 5).

Furthermore, "indigenous societies have a great many descriptive categories of the natural world, and their traditional knowledge and frameworks of thought cannot be separated from land, work, life-practices, and the relations between the individual or community and the natural world." (Cherry & Mukunda, 2015, p. 550). With this awareness of the marginalization of indigenous information through Western classification systems and the existence of traditional knowledge systems that may be of value to the organization of the Tseltal House of Knowledge, we actively explored different options to enable an indigenous classification system. The conundrum is that we wanted to honor the Tseltal language and culture, even though the library itself is a foreign concept outside the Tseltal language and culture.

It was during a digitization training workshop at the library that the group of participants engaged in the conversation about the importance of a classification system and, in particular, how the collection, once inventoried, should be organized within the library. This was a powerful moment and one where our team paused to let the discussion flow among the team of Tseltal staff and library volunteers in their native language, without our involvement. They talked excitedly, and at length about what they believed would be the best method of organization. The result reflects a practical and truly Tseltal classification system. The library's collection consists of materials created by different development programs that work on a variety of topics such as health, education, agriculture, indigenous rights, women's rights, and spirituality, as part of their development activities. These themes are organized into five broad clusters or *yomoles* (roughly translate as united or together). The five *yomoles* are *a'tel* (productive, economic activities), *ayinel* (social organizing), *ch'uhunel* (Tseltal spirituality and autochthonous church), *p'ijubtesel* (leadership training and community education), and *c'opojel* (information and communication activities, including the radio and the library). The staff, volunteers, and community leaders associated with each *yomol* work directly with communities and create their own materials, often dealing with many of the same topics across different contexts. In their deliberation, the local teams decided to mirror the topics of the *yomoles* as organizing principle for the library collection, with an additional layer of topical subheadings for each. After this decision, the teams were each able to help identify existing materials scattered throughout offices, desks, boxes, and closets across the different organizations, to organize and contribute them to the library, and to feel a sense of ownership for the materials collected under their purview.

In addition to their definition of the organizing principle for the library organization, we helped create classification worksheets and metadata to be entered into a simple database: This initial database is a scalable solution that can grow into a more comprehensive collection management system when the need and conditions arise. Finally, we helped to develop criteria for retention and digitization of collection materials, making a large proportion of the collection digital, given the high heat and humidity of this semitropical region of Chiapas, where the physical collection is stored. The Tseltal library criteria, worksheets, and classification schema were all localized in the Tseltal language after participatory workshops to adapt, refine, and validate them for local relevance and use.

The idea of a library is a novel concept for the Tseltal people, and its role to the endogenous development may be even more foreign. However, a library does provide a place and a way to hold, preserve, and organize a growing body of written documents, as well as other audiovisual materials, in the Tseltal language. Although its value today may be more symbolic than practical, its potential impact is powerful: Establishing an indigenous library communicates to Tseltal communities that their language, culture, and identity as reflected in the collection are important. A library reflects that the

belief that the Tseltal culture and language will endure for the coming generations. This is especially evident in the collections of *Fotohistorias*, testimonies paired with photographs, that our collaboration has generated. Below, we discuss how this dynamic storytelling generates a treasure trove of rich information that is visual, written, and audio, comprising a vital part of an indigenous information system.

## 4 | VISUAL STORYTELLING: *FOTOHISTORIAS* AND PARTICIPATORY PHOTOGRAPHY

The third component of the Tseltal information system is *Fotohistorias*, a methodology for gathering information about the impact of the development work among Tseltal communities through visual storytelling that expresses the participants' experiences and perspective. The Tseltal culture is primarily oral, and stories and traditions are passed from one generation to another verbally and through practice and imitation. When we were asked to help develop a qualitative evaluation method to be part of the Tseltal information system, we adapted *Fotohistorias*, a method we have used in other projects with Latino migrants (Gomez & Vannini, 2015). *Fotohistorias* uses participatory photography and variations of photo elicitation in ways that allow for the collection of deeply personal images and narratives. As a first step, participants are asked to take pictures of things that represent their answer to a question or their perspective on a given topic. As a second step, they are asked to talk about their photographs in open-ended interviews. The pictures help to guide the conversation so that participants express deeper meanings and experiences. The resulting stories are rich and complex, in ways that are difficult to accomplish through interviews alone, and the photos also serve as visual illustrations for useful context and details. The *Fotohistorias* process (Figure 3) is powerful and easy to use and can involve almost any member of a community, regardless of age, status, literacy, or gender. We adapted the *Fotohistorias* approach to the Tseltal context to harness their traditional practice of transmitting information through storytelling. We trained local community leaders in the *Fotohistorias* method and helped them use *Fotohistorias* as a tool to document the impacts of some of the development initiatives in the region and their contribution to community well-being.

Participatory photography and photo elicitation build on a long tradition of visual research used in a variety of community development contexts (Clark-Ibáñez, 2004; Dodman, 2003; Miles & Kaplan, 2005; Samuels, 2004). Participatory photography has been shown to strengthen participants' empowerment (Young & Barrett, 2001), promote surfacing of multiple perspectives (Bignante, 2010; Vannini, Rega, Sala, & Cantoni, 2015), and encourage participation by people with different backgrounds and worldviews (Samuels, 2004; Vannini, Aguirre, Rega, & Cantoni, 2013). Finally, participatory photography helps to externalize complex emotions and ideas more easily, offering richer understanding of lived experiences, especially in contexts where participants are not used to speaking up for themselves and where power relations can compromise the interview process (Clark-Ibáñez, 2004; Gomez & Vannini, 2017; Vannini et al., 2015).

Using participatory photography and interviews with Tseltal indigenous communities in Chiapas was a valuable method not only to generate rich content for the Tseltal information system but also to probe the impact of programs focused on community education and leadership training on the development of communities. The method helps to document aspects of indigenous worldviews, community development activities, and the value attributed to participation and engagement with community life, culture, language, and tradition.

In the field, we asked Tseltal community members to identify an object, place, or situation in their lives relevant to the particular topic we were focusing on. Participants would fan out into the community to take pictures with their phones or with tablet computers provided for the *Fotohistorias* project. (In some cases, participants were not comfortable using the digital camera on the tablet and preferred one of the team members to take pictures on their behalf). After participants returned with their photographs, we would look at the images on the screen. If the participant had taken several photographs, we asked them to select one to talk about, and we then conducted a conversational interview about the selected image. (In some cases, if the participant did not speak Spanish, we would conduct the interview with the aid of an interpreter). Questions



**FIGURE 3** Fotohistorias process: A community member takes a picture depicting the value of family and community in traditional Tseltal culture, and then shares it with participants (photo R. Gomez)

were meant to elicit deeper meanings expressed in the picture: Why did you take this picture? What does this picture represent to you? What is missing in this picture? How would you explain this picture to a friend? The final step in this process was to transcribe all the interviews and then code them for themes. We found that although the images generally depicted objects of everyday life, the stories revealed themes rooted to the participants' lived experiences, vital traditions, and core values deeply rooted in ancestral ways of living and notions of harmony and well-being.

## 4.1 | Four visual stories of Tseltales living fully

Between 2016 and 2018, we used the *Fotohistorias* method to document four different aspects important to endogenous development activities in Tseltal communities in Chiapas:

1. Living fully revealed information about the Tseltal indigenous notion of well-being or *Lekil Cuxlejalil*, which is experienced as living in harmony with self, family, community, environment, and spirit (Gomez, Zubair, Berwick, & Morales, 2017a). The participatory photography process that led to this first publication involved mostly community elders who spoke little or no Spanish but whose involvement and participation were crucial for uncovering important information about the Tseltal people that would provide foundational concepts for the Tseltal information system. In addition, the participation of elders was critical to gain community acceptance of the storytelling project. Once the elders participated and gave their blessing, it was a lot easier to get others in the community to participate as well. Elders were generally reluctant to take pictures on their own, preferring to ask the research team to take the pictures for them. Nonetheless, the elders were very clear about what they wanted to show, where, and how, even acting out particular prayers and offerings for the camera. And when they were interviewed, they spoke at length about the importance of what they identified for achieving community well-being and harmony. *Fotohistorias* visually depicts ideas and experiences of what it means to "live fully" and exist in harmony for Tseltales, both at home and within their community.

2. Women's words provided a vehicle for soliciting the often overlooked perspectives and contributions of Tseltal women to community well-being through preservation of culture, family, work, care of the Earth, and promotion of women's rights (Gomez, Moreno, et al., 2017b). Because the process is accessible regardless of fluency or literacy in Spanish, women of all ages in different Tseltal communities could participate. *Fotohistorias* provided a neutral way to explore the tensions in gender roles and economic power in traditional Tseltal society and how these tensions are being negotiated within a culture that places a high value on harmony within families and between men and women. Our experience with this method of information gathering revealed how traditional roles of women are being transformed, especially among younger generations. Women's groups are increasingly entrepreneurial and participating in co-ops and small businesses. Young women are more frequently going to technical and professional colleges, bringing back new skills to serve and benefit their communities. A collateral benefit of the *Fotohistorias* process was to observe that for many of the women, the experience was empowering; they welcomed the focus on their experiences and perspectives and the external validation of the importance of their work and the value of their voice and contribution to community well-being.

3. Radio Ach' Lequilc'op documented the history of the formation of the community radio station, the current work of radio correspondents in the region, and the importance of radio as a vital component of an information system to promote and strengthen Tseltal language and culture (Beltran et al. 2018). We used the project of creating the *Fotohistorias* book on the radio as a tool to train staff and volunteers about how to employ participatory photography in their work. These sessions were combined with skill-building workshops related to news gathering, interviewing techniques, and program development, all of which emphasized the power of the story to convey information and values to create more compelling and effective programs. The process helped clarify ways in which the radio programming is meeting community needs and ways in which it can be improved. Youth are very eager to participate in the radio and saw a natural fit between participatory photography and radio interviews as tools to document the impact of development activities and the lived experiences of their communities. Taking radio out of the studio and into the villages, to interview elders and peers about their language, culture, identity, and everyday practices, led to production of short radio programs with a shared common structure that fit neatly into a regularly scheduled series of radio broadcasts. *Fotohistorias* ignited the creative capacities of the radio staff and volunteers to transmit individual stories to build a composite collective story, providing vibrant and vital inputs into the Tseltal information system.

4. Caretakers of mother earth focused on documenting the rise and development of this relatively new community volunteer post. Caretakers volunteer to receive specialized training in ecological farming. The curriculum combines teachings about sustainable traditional practices and introduces new agroecological strategies that are culturally and regionally appropriate. Caretakers commit to sharing the information they learn with their communities so that Tseltal families can produce more, healthier food in ways that sustainably care for the natural resources of their ancestral lands. To document and evaluate how this work contributes to community well-being (Iribe, Gomez, Berwick, Moreno, & Vergara, 2018), we used participatory photography paired with testimonials from participants. Analysis and coding of the results yielded six overarching themes that reflected how the caretakers valued traditional practices of their grandparents and new approaches to enhancing their agricultural activities. For example, participants identified the importance of practices of their grandparents, such as cultivating corn without the use of petrochemicals and using native medicinal plants for healing. They also expressed enthusiasm for new agroecological practices, such as vermiculture (earthworm cultivation) to generate compost to enrich soils. The most powerful testimonies referred to the caretakers' endogenous development success story: The agroecology education program is now led by trained community leaders who are training a new generation of youth participants. These young caretakers exhibited more confidence to learn and employ the *Fotohistorias* method, most likely because they know how to use modern technological devices such as cell phones.

We took an incremental approach in our work: First, when we arrived in the community, we introduced ourselves, in keeping with indigenous custom, and shared photos of our families and our places of origin (an important element in trust building among Tseltales). Next, we publicly showed the results of the *Fotohistorias* previously generated in response to a theme. We allotted time to consult with indigenous leaders and community members before deciding on the next *Fotohistorias* theme and which community members and leaders would be involved in generating the next set of *Fotohistorias*. Finally, after coding the results, selecting the unifying themes, and binding them together in a cohesive narrative, we printed the books in three languages: Tseltal, Spanish, and English.

This approach allowed us to refine the methodology. We quickly realized that a physical example of the end result was the most effective way to communicate how *Fotohistorias* worked. We not only returned to Chiapas with copies of the trilingual *Fotohistorias* book to distribute to the indigenous leaders and community members who participated and gave testimonies but also took books with us to the next community to share the results of participatory storytelling work. The printed publications, filled with stories and color pictures in which community members are the protagonists, helped to emphasize that the process and its results are primarily for the benefit of the community, not of the research team. This was essential to building trust and engaging community participation and went a long way to counteract prior experiences in the community when researchers had conducted field research, taken photographs, recorded interviews, and then disappeared, never sharing the results with the community. On the contrary, our method actively sought to create an environment of mutual exchange and collaboration. This helped to make it clear that the purpose of the *Fotohistorias* work is not to take away knowledge from indigenous communities but rather to help identify, collect, and preserve knowledge that Tseltal communities consider of value and that results are to be used for their benefit, as they decide whether to pursue or not the different development initiatives they are engaged in. By engaging emerging indigenous leaders in gathering information using the *Fotohistorias* method, the community and its leaders exhibited greater confidence that the information gathered would be accurate, reflect their perspectives, and stay in the community for its benefit. As Juan Miguel Hernández Álvarez, a Tseltal leader said: "*Fotohistorias* really helps us a lot because what you are showing is the truth. We were the ones that chose what to show and how to show it, and those are our words, so what you show is our truth" (Juan Miguel Hernández Álvarez).

The *Fotohistorias* method was well received as a vehicle for gathering and generating information. But we wondered if we could also complement the qualitative data gathered through the *Fotohistorias* approach with quantitative data in order to assess the impact of information disseminated through community education and leadership training programs on the development of communities and their well-being. We are in the process of adapting questionnaires to help gather such quantitative data related to development impact and community well-being, based on our previous work with Community Wellness Outcomes (CWO) (Gomez, Reed, & Chae, 2013; Gomez, Reed, & Young, 2014). We consulted, edited, refined, and tested a set of five questionnaires during the *Fotohistorias* work with caretakers of mother earth, building on the experience of trained community leaders acting as facilitator-trainers. Although they prefer the open-ended questions of *Fotohistorias* ("open questions open the heart," they said, "while closed questions close it"), their feedback and recommendations to adapt five sets of questionnaires and Likert scales to measure self-esteem, adaptive creativity, civic engagement, communication, and community participation offered profound insight into the future utility of combining quantitative and qualitative measures of community well-being as part of the Tseltal information system.

## 5 | TOWARD A TSELTAL INDIGENOUS INFORMATION SYSTEM TO PROMOTE COMMUNITY WELL-BEING

We have described in some detail each of the three components of the Tseltal indigenous information system. This system creates synergies, which build on the interaction and cooperation of each component: community radio, community library, and visual storytelling. The overarching goal of this system is to promote indigenous development in ways that strengthen the rich cultural heritage and language of Tseltal indigenous people in Chiapas, Mexico. To this end, we collaborate with Tseltal leaders to develop practical tools for each component of the information system to increase informational literacy in ways that are anchored to Tseltal notions of well-being or on *Lekil Cuxlejalil*. Unlike Western notions of development, which primarily focus on economic or health outcomes, Tseltal communities conceptualize well-being as also including spiritual, psychological, and environmental aspects that together create a harmonious whole between individuals, their communities, and the earth.

The synergies flow within and through the system in a cycle that is generative, receptive, and distributive through a kind of collective dialogue. For example, strategic and practical skill building in news gathering and reporting engages the community radio staff and volunteers in a process that creates programming not only to disseminate information and revive traditional knowledge but also to socialize new ideas. Tseltal communities are involved in generating content through such activities as interviewing and visual storytelling, which in turn adds further complexity to the information system as new topics and sources of information are identified. What is created—written, audio, and visual—is organized in the library according to a cataloguing framework that reflects the Tseltal worldview. Visual storytelling, coupled with targeted questionnaires and interviews, in turn provides additional sources of feedback to test the impact of the system's ability to spread information and to catalyze behaviors that improve individual and community well-being. The Tseltal information system, composed of radio, library, and visual storytelling, is centered around the Tseltal notion of well-being as living fully (*Lekil Cuxlejalil*).

Tseltales, from childhood, learn by watching and working with their elders in an apprenticeship model based on metaphorical "little brothers" and "little sisters." Training workshops for each of the areas of work in the Tseltal information system (radio, library, and visual storytelling) were designed to include experiential learning techniques and field practice, not just presentations and lectures. We used games, simulations, practice

activities in small groups, and field visits, as ways to explore, refine, expand, and deepen the understanding of the different concepts and practices. Designing and implementing the Tseltal information system presented some important opportunities, as well as some salient challenges.

## 5.1 | Commitment to social justice and indigenous endogenous development

Although the Catholic church has a long history of oppression and colonization of indigenous communities in Latin America, the Jesuit Mission of Bachajón supports and promotes community-led development programs in Tseltal communities in Chiapas and is strongly committed to social justice and indigenous endogenous development, including support for the prevalent hybrid religious practice that combines Catholicism and Tseltal Maya rituals and traditions. Without the vision, leadership, and resources of the Jesuit Mission, none of this work would be possible. Nonetheless, until recently, the radio programming has been almost exclusively religious content—including religious music, in part because Tseltal elders have insisted that the radio should primarily air religious topics as a way to combat the incursion of Western commercialism and some members of the Jesuit Mission have pushed for 100% of programming to be the Tseltal language, eschewing Spanish programs and music, even though this guideline risks alienating a generation of younger listeners who are growing up in a bilingual and bicultural world. In addition, radio programming that is better integrated into the content and practices of the different development initiatives and *yomoles* working groups is still very tentative and incipient, perhaps because the team is still growing in its understanding that community radio must be proactive in developing and disseminating programming that advances a vision of development and community well-being.

## 5.2 | Strong teams and organizational practices

The deployment of development programs in the Tseltal communities builds and relies on a traditional system of apprenticeship through practice, carried out by volunteer leaders elected by each community for different activities (*cargos*), and a regional organization distributed based on traditional clan groupings (*ts'umbales*, subdivided in zones and regions). This traditional organization of teams, delegation of leadership, apprenticeship through practice, and the ensuing mechanisms for information to flow, primarily orally, up, and down between individuals, families, villages, zones, regions, and *ts'umbales*, offer a unique organizational context for development activities to flourish with strong grassroots and buy in. The Tseltal information system builds on this array of teams and organizational practices; without them, it would be a lot more challenging to effectively deploy an information system of this nature.

## 5.3 | Strong existing infrastructure

The community radio was already in operation when we started our work and boasted good quality equipment, although the radio station's technical capacity and infrastructure (recording studio and equipment, mixing consoles, transmitter, and license) were underutilized. We focused our work on improving and making better use of available resources through training and strategic planning, rather than on figuring out how to acquire, repair, or install equipment. When we began, the library existed only as a building: There was a large, empty room available for use. Our work focused on making effective use of the available space and training for one key staff and a small group of volunteers to identify, select, classify, digitize, and preserve the initial collection of Tseltal materials for the library. Rather than acquiring a large number of computers, as originally planned by the Jesuit Mission and local affiliated organizations, we helped to scale purchases back, so they could start smaller, grow slowly, and scale as needs arise. Some of our work was delayed because of structural problems in the building that caused water leaks and seepage. Fortunately, these issues have been addressed with repairs and equipment, although it remains to be seen whether the library's nondigital collection can be preserved in the building. These can be unusual circumstances in development programs in indigenous contexts.

## 5.4 | Adverse weather conditions, long distances, unreliable electricity/cell phone/Internet

Chiapas is mountainous, hot, and humid. The Tseltal territory is large, and many communities can be reached only on foot or on very bad roads, and apart from the main towns, there is little electricity and almost no cell phone service. This all makes truly inclusive and participatory processes hard, slow, and expensive. Electricity, cell phone, and Internet can be unreliable even in the main towns of Bachajón and Chilón, where the Jesuit Mission and CEDIAC and CAEC, the nonprofit affiliated organizations, and Radio Ach' Lequilc'op are located. The heat and humidity make preservation of printed documents and other library materials especially challenging. Air conditioning and humidity controls that are standard in preservation of library collections are out of the question even in the town of Bachajón, where the library is located. This means that there is a strong need to digitize as much of the collection as possible before it deteriorates due to heat and humidity. Internet in the library is unreliable, though, which makes managing and backing up a large digital collection more challenging.

## 5.5 | Training and deployment are people intensive

The design of training activities that are participatory and action based requires extraordinary amounts of time and special skills to combine technical expertise, educational acumen, and cultural sensitivity to ensure that contents are meaningful and relevant in the local context. This sometimes means abandoning or completely transforming some things, even after a substantial investment of time and resources. Furthermore, community leaders and

other participants in the training sessions and deployment activities are all busy, with multiple competing priorities, and sometimes with frequent rotation from one topic or area to another. This can make it difficult to maintain team continuity over time and is especially challenging if there is a single staff person who is well trained to lead the activities (radio, library, and storytelling), with teams of volunteers.

The processes we describe here can be slow, and as any endogenous approach, it takes time and lots of effort. Tseltal elders say the best leader is the one that walks slowly and does not get caught up in the daily pressures of agendas and to-do lists but rather follows the rhythm of "time beyond time." The success and development of the Tseltal information system ultimately depend on its integration with the existing network in the region and the work that the Tseltal communities and stakeholders have done over many years and will continue to do for years to come. Our part is just a drop in the bucket.

## 6 | CONCLUSIONS

We discussed an integrated approach to a Tseltal indigenous information system in Chiapas, Mexico, that combines community radio, indigenous community library, and storytelling with participatory photography to create synergies, which build on the interaction and cooperation of each component and provide culturally appropriate tools to strengthen and promote Tseltal indigenous culture and endogenous development and to increase informational literacy in ways that are anchored to Tseltal notions of well-being. We offered related examples for each of the activities with other communities around the world, but the Tseltal experience is the only one that combines all three to promote indigenous language, culture, and endogenous development. After offering a detailed description of each of the components of the information system—radio, library, and storytelling—we offer some elements in the context that pose opportunities and challenges to the success of this program. We aim to leave an established, functioning information system that will effectively use the community radio, the library resources, and visual storytelling as integrated tools to promote, protect, and advance Tseltal language, culture, and development.

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