



TECHNOLOGICAL AUTONOMY AS A
CONSTELLATION
OF EXPERIENCES

A guide to collective creation and development
of training programmes for technical
community promoters

Association for Progressive Communications

<https://www.apc.org/>



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INTRODUCTION

The objective of this methodological proposal is to give some practical recommendations for the creation and implementation of relevant and contextualised training programmes for technical community promoters that favour the creation and consolidation of community communication and telecommunications projects, especially for community networks.¹ This is a call to continue weaving technological autonomy by sharing our experiences and knowledge in these training programmes.

In the first part, we want to share our vision on community networks, technological autonomy and training. We express this through a conceptual reflection in order to share some examples of the diversity of training experiences that exist and tell a little bit about our experiences in the Training Programme for Technical Promoters in Telecommunications and Broadcasting Techio Comunitario.

¹ Although the guide was made to design and implement training programmes for the creation or consolidation of community networks, we believe that this methodology and these proposals may be useful for other types of communication projects and community organisational processes.

In the second part, we propose a series of recommendations for the design and implementation of community network training programmes through five phases based on Participatory Action Research (PAR): scenario building, seeing, thinking, acting and evaluating.

Let us start from a metaphor. When we gaze at the night sky, if the clouds and artificial lights allow it, we will find a cluster of flashes that make us feel the immensity and the aliveness of the Universe we inhabit. The stars that compose this great map seem to be immovable and occupy the same position. The history of humanity has been intricately linked to this star map. Different civilisations have grouped the stars under imaginary lines that offer an explanation about the environment, based on the worldviews of their own peoples who draw these patterns. This is what we call constellations.

These imaginary lines allow us to understand the diversity of explanations we have about our lives. They have also allowed the development of civilisations, for example, navigating the

entire planet or establishing the cycles of agriculture. In that sense, without losing sight of all the knowledge that has been generated through them, they are also reflections of the historical destruction of other knowledge and beliefs, as well as exercises of power of some civilisations over others.

We have a partial vision of the Universe and the stars that compose it. What we can see is determined by the position of the Earth in this vastness. Also, the time that we perceive is different, the flashes that come to us can be from stars that are light years away, and what we see are events that have occurred long before we existed. Likewise, currently we have been limiting the possibility of looking at the stars, reducing the natural darkness of our spaces, being dazzled by the lights of the cities that prevent us from seeing the greatness of the Universe that surrounds us.

We want to start from the night sky and constellations as a metaphor, since they allow us to understand what communication and technologies are, and why it is important to think about technological training for the development of community communication and telecommunications projects from a different perspective.

Let us turn our gaze once more to the starry sky, let us think about those flashes, how distant they appear to us

and all the stories that have passed by while looking at them. Let us now think of everything that we cannot see, of what our gaze cannot capture, of what is also hidden in the day by sunlight or the dark spaces between each star. Let us also imagine the thousands of years that have passed for the light to walk into our eyes. Surely our thinking will be overwhelmed by this immensity of relationships, stars, spaces, and times.

We can understand our history just like that starry sky. The large number of stars and apparently empty spaces that are on this horizon, constitute the entire accumulation of diversities that accompany our walk. Within all that space, people are only a tiny part of it, but here we are, being part of the set of relationships that make existence possible. But there are also all the living and non-living species with which we interact, such as mountains, valleys, oceans, rivers, animals, plants, fire, earth, air or water. Communication is that broad historical process that makes the entire system work; it is that energy that allows the generation of relationships between the particles to form environments as wide as the Universe itself.

Communication between people is a particular form of these relationships with characteristics built through the passage of history and each group of people has found different ways to develop it. Language is a mechanism by

which we name the world and through it we share explanations about our realities. However, language is not only about what we speak or write, what has developed through the speech apparatus or written symbols; it is only one part of the complex system of experiences and knowledge exchange we have. Through communication we express our feeling-thinking, which includes, among other things, the way we dress, what we eat, the gestures and looks we make, the way we organise or build our territories of life. Although there is a tendency to unify these ways of communicating, diversity is still one of the elements that allow us to continue our existence in a world increasingly hurt by our desire for power over the things that surround us.

In other words, communication is not only what is mediated by technologies, but a broader and diverse process in which relationships are woven between people and nature, allowing our environment's sustainability. Communication is much more than what appears to us at first glance; our physical and mental limits prevent us from seeing all those communication forms that have existed throughout time and space.

Now let us think of communication technologies as constellations, as imaginary traces that allow these relationships to be woven between stars that are distant in time and space.

These communication tools, from the codices of ancient civilisations to the global internet network, have sought to eliminate spatial and temporal distances in order to share knowledge, and overturn geographical and historical limits.

These technologies are not neutral; they have been created for specific purposes and respond to the logic of power and domination. They are imaginary patterns created under a particular world vision and they seek to be tools so that this way of understanding is penetrated in others. However, there are constellations we can draw over them, other views that have generated different lines and have used and transformed them to respond to their ways of life and dreams. For this, it has been necessary to break the "unique truths" that exist about technologies, visualise their risks and generate mechanisms to enhance their possibilities.

In this guide, we want to make an invitation to carry a vision of communication and its technologies in a broad sense to build "other possible worlds". If we visualise the implications that constellations may have for exercising dominance of certain life forms over others, technologies can also be mechanisms for establishing power relations. Thus, if we think that it is possible to generate other paths, we will find specific ways to understand

and appropriate technologies in order to reinforce our dreams, desires and hopes.²

The starting point of the proposal that we make in this guide is that training is also a form of communication, a particular way of sharing experiences and knowledge with other people. When we talk about training for communication processes and community telecommunications, the diversity of ways of training us has to do with these forms of communication and with the creation of new technological constellations that reinforce them.

The training programmes we visualise aim, at a first instance, at introducing people who are not familiar with the creation, operation, and administration of communication networks. But the main goal to be pursued is to create a network of technical promoters who accompany each other in solving technological, organisational and sustainability problems, and who have lost their fear of technology and are able to solve common faults. In general, we think about a programme that allows

² Based on the experience in accompanying the Indigenous communities of Mexico and Latin America in the development of community communication strategies and the use of ICT relevant to the territory, we developed a guide that allows us to rethink communication and its technologies, to find possible new paths towards technological autonomy. Baca-Feldman, C., & Parra, D. (2020). *Let Us Rethink Communication Technologies: Methodological Proposals to Design and Implement Community Communication Projects*. Redes por la Diversidad, Equidad y Sustentabilidad A.C. <https://bit.ly/3rNcAUP>

building a community for the exchange of experiences and knowledge on these topics. Once these objectives are achieved, we can begin to think about how to support specialisation in different subject areas that reinforces the knowledge learned and responds to the interests of the people who have participated in the programme.

In this sense, for us a training programme refers to a series of actions and strategies that are being developed to meet the general objective defined by the organisations or communities that promote the process. The invitation we make is that the knowledge and experiences in the technical, economic, political, regulatory and social fields necessary for the creation and consolidation of this type of projects need to be shared.

The forms of these programmes can vary widely, with different times, techniques, content and methodologies, depending on the context in which they are developed. We propose that the design of training programmes allow teams to achieve the dreams and objectives that they set for themselves in the medium and long terms. Ultimately, the end goal is to strengthen this network of technical community promoters. Although we know the value that isolated courses and workshops have, we consider that the axis to start from is this joint vision of actions and strategies that are presented in a training programme.

This guide is aimed mainly at people, organisations and communities that see training as crucial to promote their own communication and telecommunications processes within their territories or regions. We know that there are initiatives around the world that have generated very valuable training strategies and we want to dialogue with them to reflect on their practices and methodologies.

The proposal is to slow down a little bit of the hasty rhythm of our lives to reconsider our horizons and training strategies. It is about meeting and looking at ourselves to weave together those experiences that make it possible

to continue building the paths towards “other possible worlds” through the use and transformation of communication tools.

Finally, we want to share that this methodological proposal has been possible thanks to the many experiences we have been able to share. We thank each person and organisation that, directly or indirectly, has been a part of building this guide. The recommendations we present are based on our own experience, our reconstructions and lessons learned. By sharing them, we hope they resonate in other spaces and territories.

It is possible to create new lines in the constellations that appear to us in the starry sky! Let us keep rethinking ourselves and rethinking communication, technologies and training to collectively build “other possible worlds”!

PART 1:

REFLECTIONS AND EXPERIENCES TO
(RE)-THINK
THE PROCESSES OF TECHNOLOGICAL TRAINING



1.1

TRAINING AND PATHS TOWARDS TECHNOLOGICAL AUTONOMY

This section presents a brief reflection on the importance of training in the creation and consolidation of community networks. We consider that it is necessary to first address the analysis of what we understand by community networks and technological autonomy.

1.1.1 CAN WE DEFINE WHAT COMMUNITY NETWORKS ARE?

Community networks are examples of the different patterns in the night sky that are generated from communication technologies. They are one type of communication strategies mediated by technology within a vast accumulation of experiences in which communities decide to generate their own paths towards autonomy and self-determination. The variety of processes that are woven around them, responds to the visions of the world and the ways of life of the communities where they are developed. Technologies acquire new meanings and are critically questioned by thinking of them as tools and not as ends. This does not mean that they do not have contradictions or are not ingrained forms of power. In fact, they are lines being drawn little by little and face the challenge of continually dissociating themselves from what has been established as “correct”, thus they are experiences in constant construction and resignification.

From our point of view, talking about community networks implies much more than access to a specific connectivity service. They are organisational and technology management processes in favour of the dreams, desires, needs and problems of the communities in which they are developed. For us, creating and managing community networks is not just a technical matter, but a way of using, appropriating and transforming communication tools in a particular territory, with its own ways of life, development objectives, culture and identity.

Thanks to this anchoring within the territory and the lifestyles of the communities,³ there is enormous diversity in the ways of managing, sustaining and operating networks, with very varied technologies, as well as different goals and strategies. This makes it difficult to have a single definition of a community network. However, it is in the impossibility of conceptually enclosing it that we find its main strength: **diversity**.⁴

The diversity of the world's community networks responds to the contexts in which they develop, and the communication needs or access to information to which they respond. Territorial, economic, political and cultural aspects are elements that demarcate these differences and contribute to the creation of different training models that accompany their development.

Although it would be an almost impossible task to describe all the experiences and forms acquired by the training processes linked to community networks and the appropriation of communication technologies, we want to highlight two categorisations, among many that may exist, that allow us to understand this diversity.⁵

On one hand, if we think about the **type of territories where they develop**, we can find some characteristic features:

³ We want to escape from a vision of communities only as delimited spaces in a territory, most of the time in rural contexts or remote areas of large cities. On the contrary, we understand communities as living processes in which people interact with each other to achieve their goals and dreams. When we refer to communities, we think about processes, not static constructions. As Raúl Zibechi says in his article, it is about "creating community instead of being community." Zibechi, R. (2015). Los trabajos colectivos como bienes comunes materiales/simbólicos. *El Apantle, Revista de Estudios Comunitarios*, 1, 73-97. <https://bit.ly/3iOyK3Z>

⁴ This premise resonates with the experience of many years trying to define what community media or community radio was. Clemencia Rodríguez pointed out in 2009 that 10 years before, she counted more than 60 terms that define this type of communication experiences. Each one of these concepts considers different elements in its organisation, purposes and type of technology used. The same happens with community radios: it is possible to find more than a thousand definitions on the internet. In the case of community networks, we think that the situation is no different, therefore, instead of trying to enclose them in a particular term, we must think about the strengths that the vagueness presents. Rodríguez, C. (2009). De medios alternativos a medios ciudadanos: trayectoria teórica de un término. *Folios, Revista de la Facultad de Comunicaciones de la Universidad de Antioquia*, N° 21-22, 13-25. <https://revistas.udea.edu.co/index.php/folios/article/view/6416/5898>

⁵ A wide variety of technologies and processes followed by community networks around the world can be found in Finlay, A. (Ed.). (2018). *Global Information Society Watch 2018: Community Networks*. Association for Progressive Communications (APC) & International Development Research Centre (IDRC) <https://www.giswatch.org/community-networks>

✦ There are community networks in cities in which people get organised to have more affordable and safe services than those provided by large operating companies. Examples are NYC Mesh⁶ and Detroit Community Technology Project⁷ in the United States or TunapandaNET⁸ in Kenya.

✦ Likewise, there are networks in rural contexts in which some communities without connectivity generate collective strategies to achieve this purpose. Zenzeleni Networks⁹ in South Africa, AlterMundi¹⁰ in Argentina, Portal Sem Porteiras¹¹ in Brazil, Digital Empowerment Foundation¹² in India or guifi.net¹³ in Catalonia, are experiences that have been developed in this type of territory.

✦ Indigenous communities have also developed their own networks to face the digital gap, but also to reinforce their organisational processes, identity and culture. As examples we can explore cases such Common Room¹⁴ in Indonesia, Telecomunicaciones Indígenas Comunitarias¹⁵ in Mexico or the Red INC¹⁶ network in Colombia.

Another category for their differentiation can be found in **their purposes and the technologies they use** for them. In this sense, we can differentiate between those whose main objective is to access information, and those that seek to strengthen communication processes between people inside and outside a community. This does not mean that their priority objectives eliminate the possibilities of attending to the other needs, but it implies that one of the two is given greater weight.

✦ Some community networks focus on accessing information found on the internet. This is the case of most community networks that operate through their own infrastructure to connect to the large network. The technologies they use can vary from links across the radio spectrum to fibre optic deployment. This also

⁶ <https://www.nycmesh.net/>

⁷ <https://detroitcommunitytech.org/>

⁸ <https://tunapanda.org/>

⁹ <https://zenzeleni.net/>

¹⁰ <https://altermundi.net/>

¹¹ <https://portalsemporteiras.github.io>

¹² <https://www.defindia.org/>

¹³ <https://guifi.net/es>

¹⁴ <https://commonroom.info/>

¹⁵ <https://www.tic-ac.org/>

¹⁶ <https://redinc.colnodo.apc.org/>

includes closed networks or intranets in which local content banks are generated or selected by the communities and that are not necessarily connected to the internet.

✦ Those whose primary objective is to strengthen communication between people in the community use other types of technologies to make this possible. Cell phone networks or those that use ultra high frequency (UHF) technologies or citizen band radio (CB radio)¹⁷ can be some examples of this. In general, they seek to reduce physical distances between people through the use of technologies that allow immediate two-way communication.

Despite this diversity, it is possible to identify some characteristic features: the use of information and communication technologies (ICTs) anchored to a political objective, an opposition to the notion of private property and profit as the main objective, or the search for community participation in the installation, management, operation and maintenance of the network.

¹⁷ These types of frequencies allow two-way voice communication, they have a particularly good range in rough terrain and the equipment is affordable and easy to use and maintain. Rhizomatica is currently developing the HERMES project in the Brazilian Amazon to ensure that, in addition to voice, data can be transmitted through these frequencies. Information on this project is available at:

<https://www.rhizomatica.org/hermes/>



Although community networks appear to be recent technological projects, they are based on historical processes in which communities have developed forms of organising common goods. Examples of this are community management of the territory, water, public spaces, etc. This has also occurred with other communication technologies such as radio, video, press, murals, theatre, loudspeakers and others. These same communities are the ones that today decide to oversee their communication networks. For this reason, we consider that, rather than merely technological projects, community networks are actually organisational processes.

This does not mean that community networks are straightforward processes. There are many challenges to face, such as creating or using relevant technologies, designing sustainability models in each context, advocating for an appropriate regulatory environment or generating schemes that facilitate content production and exhibition. There are many elements that make a community network sustainable over time and its success resides in a decision-making process generated collectively and in the sustenance that it has in the ways of life, culture and identity of the communities in which it develops.

Therefore, when we speak of community networks, we think of a series of diverse organisational experiences that weave a path towards **technological autonomy**. This concept refers to the capacity that people and communities must have to make decisions about what, for what and how technological projects that involve them will be developed. In other words, it is a way in which decisions about technological matters are made by the same people who use them, based on their needs and dreams and not by outsiders who decide, often from afar, the tools we will use to communicate.

The decisions and paths to technological autonomy are not simple, nor do they have a fixed goal to achieve. These are constant and unfinished processes of critical reflection, in which new challenges are faced and the steps to follow are decided collectively. Communities, as we have corroborated countless times, know what they need for their own development and it is key they have autonomy in making decisions about how to achieve their dreams or goals. This also applies to processes that involve the use and appropriation of communication tools; the sharing of knowledge in all areas is essential so that decisions can be made for the direct benefit of the people who live in the communities.

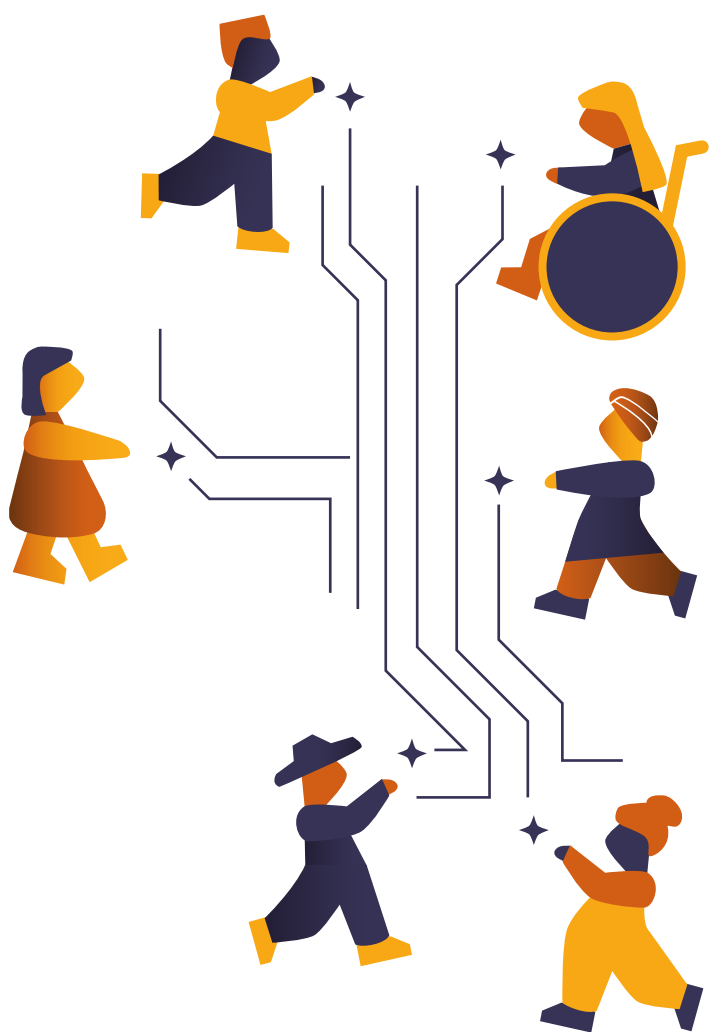
1.1.2 DIVERSITY IN THE PROCESSES OF TECHNOLOGICAL TRAINING

In community networks, training becomes a central element to achieve social, economic, and political sustainability. For this to happen, it must be designed and implemented based on the principles, values, ways of working and learning in the territories where it takes place. Likewise, it should be considered as a process

in constant adaptation and in which all the network management elements are understood by the people who are being trained.

The diversity that exists in the paths towards technological autonomy also resonates in the multiple ways, objectives and methodologies that have been implemented to share the knowledge necessary for the creation, operation and maintenance of communication networks, as well as the use of ICT in community development projects.

The main argument we want to share is that training should not only reinforce technical or practical elements to create and operate community networks, but mainly the political, organisational, economic and cultural horizons that they entail. This is only possible understanding that technologies must be adapted to the community's ways of life, not the other way around. Training must also do so, considering the diversity of ways of inhabiting the world and the exchange of experiences and knowledge of the people who live in it. To achieve this, there are many dominant logics that we need to break, such as the economic, cultural, educational, gender, political and



social barriers that mark hierarchies in making decisions about our lives.

There are diverse challenges faced by initiatives that develop training processes with communities. In this section we want to mention those that seem most relevant to us and that are shared by the organisations with which we have dialogued on these issues.¹⁸

On one hand, we consider that training must **break with the dominant educational paradigms** and with the notion that only “experts” can create, use or transform technologies. On the contrary, it is required that the people who live in the communities, who use these technologies, and are constantly being segregated from technical specialisation, are the ones to whom we direct these training efforts. We must comprehend that the communication networks in rural contexts or economically and socially marginalised areas that are created, operated and administered by the communities, are the only ones that have demonstrated to be sustainable over time.

For this reason, in many cases training processes are designed **focusing on practically solving challenges in real contexts**, rather than transmitting concepts in a classroom. The intention

¹⁸ It would be an enormous challenge to develop an in-depth study of training experiences linked to community networks that exist around the world. However, in Annex 1, there are some examples that help us to understand the diversity of objectives, methodologies and resources employed.

of this type of programme is to train people to have the necessary knowledge to install, operate, maintain, and manage the networks directly in their communities. Examples of such cases are Common Room in Indonesia, guifi.net in Catalonia, Detroit Community Technology Project and NYC Mesh in the United States, and Zenzeleni Networks in South Africa.

These organisations, besides sharing knowledge during the installation of nodes and networks, develop mentoring programmes for people who have completed the training, for them to train new people. What these training proposals share is the idea that the best way to learn is through practice and that constant accompaniment is required so communities have autonomy in their networks.

There are also other training experiences **that focus on the development of skills for community network management**, but that are not necessarily anchored to the processes of installation and operation of networks directly in the contexts in which they are developed. What is remarkable in these processes is the creation of networks of people committed to this type of technological projects, who are in these training spaces and are subsequently accompanied. For example, within the Workshop para América Latina y el Caribe (WALC),¹⁹ there is a course dedicated to community networks. During a week of face-to-face work (in 2020 it took place virtually during the COVID-19

¹⁹ https://eslared.net/linea_walc

pandemic) participants can learn and exchange experiences on sustainability, network management and technical aspects. A similar case is DigitalNWT²⁰ in Canada, in which, through 12-hour workshops, adult educators from north western rural areas meet to learn about digital literacy issues and development of community networks that can be replicated in their own communities. The programme lasts four years and sessions are held annually. Although in both training experiences it is not possible to generate technical specialists, what can be done is to lay the foundations for the application of the knowledge acquired in their own communities.

Likewise, we find cases in which an important emphasis is placed on **knowledge transmission through different pedagogical materials**, produced by organisations or selected for their relevance to the training process. A particularly important challenge that we have faced and that was mentioned by the organisations with which we spoke, is that most of the pedagogical inputs on technologies are in English, which makes it difficult for communities where other languages predominate. The solution that many organisations have given is the translation of these materials. However, this becomes a particularly complex problem in regions with different languages. Also, many of the materials are not designed in a way that people

²⁰ <https://sites.google.com/ualberta.ca/digitalnwt/home?authuser=0>

without prior technical knowledge can understand them, so translation is not only linguistic but also conceptual.

An important example is the Spoken Tutorial²¹ in India. This programme has a knowledge transmission system on free software and ICT in which training is carried out mainly online through a series of audios and videos about different technical topics. In addition, there is a support centre for people who wish to solve doubts about different topics. Contents can be reproduced in various languages spoken inside and outside the country.

Other organisations have sought to systematise and share basic knowledge for the operation, installation or administration of community networks. There are very good experiences of this type of materials, like the ones developed by AlterMundi,²² Rhizomatica,²³ Digital Empowerment Foundation,²⁴ or Detroit Community Technology Project.²⁵ There are also specialised platforms on certain issues of community network sustainability. For example, for public policy and connectivity issues, APC is developing a platform to share good practices²⁶ in these themes.

²¹ <https://spoken-tutorial.org/>

²² <http://docs.altermundi.net/>

²³ https://wiki.rhizomatica.org/index.php/Main_Page

²⁴ <https://www.defindia.org/publication-2/>

²⁵ <https://communitytechnology.github.io/docs/cck/index.html>

²⁶ <https://policy.communitynetworks.group/es/start>

Although these efforts are especially important, we believe it is necessary to generate mechanisms to exchange and access this type of material for it to reach the people and organisations that have this interest. It is also important to encourage systematisation, evaluation and dissemination of this knowledge related to these experiences of community communication.

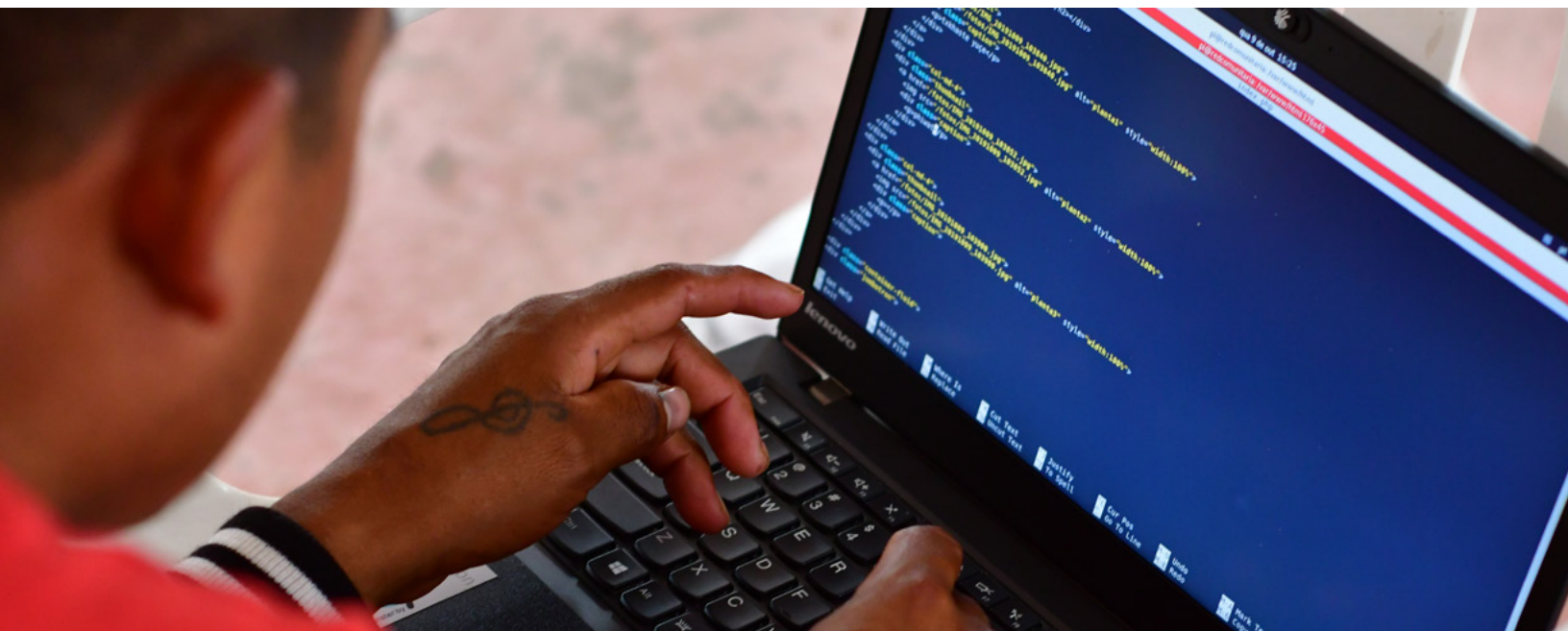
It is also crucial to **break the masculine and patriarchal vision in the technological field**. Some training experiences focus on breaking these logics of domination under the premise that technological appropriation has no gender and that it is essential to emphasise the importance of the participation and leadership roles of women and other genders in these social processes and community life.

There is still a long way to go to transform this problem. Therefore,

community networks and ICT training programmes with a gender perspective are fundamental. In this sense, another element that has been the axis in the design and implementation of training programmes are mechanisms that break gender barriers related to technologies.

An experience that allows us to understand all the dimensions from which these gender gaps can be broken in technological training processes is AfChix.²⁷ They develop accompaniment programmes for girls and women who wish to enter the ICT field professionally, through days dedicated to girls and technologies, technical workshops or support for participation in international conferences. On the other hand, through the project “Gender-Sensitive Approach to Connect the Unconnected Using Community Network Models”, they

²⁷ <http://www.afchix.org/>



develop community network projects with a gender perspective in four African countries: Senegal, Kenya, Morocco and Namibia. With these initiatives, little by little, they are transforming paradigms and generating processes in which girls and women become central in the development of their technological projects.

Another experience that we would like to highlight takes place in Brazil. In the Souza neighbourhood, in Monteiro Lobato, the organisation Portal sem Porteiras has accompanied the creation of a community network with a gender perspective. The process they carry out includes a comprehensive vision of communication; technologies are thought from their integration with the way of life of the community through critical reflections on the internet and telecommunications.

In particular, they have developed the project Nodes that Bond,²⁸ whose objective is to train women in technological issues and the creation of communication materials based on their own reflections on community life. Its methodology consists of conducting reflection circles for women from which communication strategies are created. One of the first exercises was the development of a series of interviews of women interviewing women, which were later uploaded to an intranet for community access. The interesting thing about this training

²⁸ <https://www.apc.org/en/news/nodes-bond-meet-women-building-community-networks-rural-brazil>

programme has been not only to focus on communication and its technologies as goals, but to encourage reflection from and with women about their reality using their communication tools.

Although these two examples allow us to think about different visions and strategies to confront the masculine and patriarchal vision of technologies, the truth is that this is an issue that seems to be increasingly transversal in the design and implementation of technological training programmes. Today there are many debates that occur around the issue in organisations and various strategies are generated to address it. We believe that it is a path that has already begun and will require us to focus our gaze on it and constantly rebuild our practices and horizons. We consider that this aspect is crucial and should be part in the design and implementation of our training programmes.

Another important element has been the **role of community networks as financial support for those who participate in their management and administration**. This responds to the need to disrupt the ideas that connectivity by itself brings economic benefits to populations that access telecommunications services. When connectivity is conceived as a central objective in unconnected communities, entertainment is privileged above all and the costs for services and devices can create more problems than benefits. Likewise, when these projects are developed by external



entities, monetary benefits rarely remain in the community. Community networks, in general, seek to address these problems and are distinguished from other forms of connectivity in a financial perspective.

For this reason, some organisations have sought alliances to develop training processes that address the way in which collective entrepreneurship projects can be developed that, in addition to making networks financially sustainable, can also be a source of income for those who operate and administer them. It is with this vision that guifi.net carried out a workshop for installers and suppliers in Madrid,²⁹ in alliance with the Asociación Cultural La Kalle and REAS Madrid. From the perspective of the social economy, technical issues were combined with entrepreneurship and cooperatives management themes. The course consisted of 10 modules, four hours each, and a follow-up programme.

Another similar case, but with a different structure, is developed by Tunapanda Institute in Kenya. The mission of this organisation is to create an environment for lifelong learning, obtaining resources and solving problems to create sustainable solutions, and to improve the livelihoods and self-expression of people living in low-income environments of East Africa, like Kibera (informal settlement of Nairobi). Among other activities, they carry out a three-month training programme in which tools are provided for the use of ICT as a

²⁹ <https://hackmd.io/QUwxZqk7Txm74pz09NPtoQ>

source or support in obtaining income for the participants. In a similar sense, we find the development of training strategies in the Centre for Information Technology and Development (CITAD)³⁰ in Nigeria. It addresses areas such as the development of technology applications in governance and elections; youth development and entrepreneurship; peace building efforts, including monitoring of hate speech, transparency and fight against corruption; as well as business development and promotion of ICT.

In this sense, a crucial part of these training programmes has to do with a strategy that allows participants to find in technologies the tools for their own economic sustainability and face unemployment problems in their countries. However, we believe that an important part of training in these fields is a vision that not only considers monetary income as a mechanism for the sustainability of technological projects, but other types of relationships that can make people and organisations sustainable.

Finally, **online training strategies** have been generated to break down geographic barriers and use technologies to establish interaction mechanisms between distant territories. Many possibilities are created to develop activities that would be expensive in person and require other times and forms of organisation. However, online training presents many challenges that are important to address so that the

³⁰ <https://www.citad.org/>



objectives of transmission and exchange of knowledge and experiences are really achieved. Although online education tools have been in place for many years, we need to rethink them and look for ways in which communication can be established properly, despite distances.

With the COVID-19 pandemic, these challenges and distance training strategies have increased exponentially, due to the restrictions that have been implemented to stop infection spreading throughout the world.

For example, the Internet Society (ISOC) implemented two training programmes in the Americas through online platforms, unlike other occasions in which this organisation supported and coordinated face-to-face courses. On one hand, for the United States and Canada, within the framework of the Indigenous Connectivity Summit 2019,³¹ two courses were developed: one on public telecommunications policies, and another one on community network development. On the other, for Latin America, Construyendo Redes Comunitarias Inalámbricas (Building Wireless Community Networks)³² offered a course in which technical topics for the creation of networks through radio links were addressed. For both training activities, a methodology was implemented that combined live seminars and access to materials on each topic addressed. And, particularly,

³¹ <https://www.internetsociety.org/events/indigenous-connectivity-summit/2019/trainings/>

³² <https://www.internetsociety.org/tutorials/wireless-community-networks>

in the course for Canada and the United States, kits of tools necessary for practical training were sent to the participants.

Other courses have also been developed through the internet, such as the Workshop para América Latina y el Caribe (WALC). Others have sought to combine face-to-face strategies with virtual ones to face these challenges, such as the strategy they developed at the Rural ICT Camp³³ coordinated by Common Room in Indonesia. In 2020, changes were also made in the strategies implemented for the development of meetings and events related to community networks. The African Summit of Community Networks³⁴ organised by ISOC and African organisations, or the Internet Governance Forum (IGF)³⁵ are examples of international spaces that were carried out virtually.

We believe that the challenges that virtuality imposes on us should continue to be thought through and addressed collectively to face them. The lack of tools and the disruption of daily dynamics based on online training tools, the lack of connectivity of a high percentage of the world's population, the lack of capacities for the use and appropriation of technologies or the costs they imply are some of those challenges. However, this emergency context has also shown

³³ <https://commonroom.info/rural-ict-camp-2020/>

³⁴ <https://www.internetsociety.org/events/summit-community-networks-africa>

³⁵ <https://www.intgovforum.org/>

the importance of this type of social process, in spaces that previously did not consider community networks as essential, and new horizons are opened for their expansion.

Of course, not all the examples described here make up a general map of training experiences related to community networks. Nor does the fact of having mentioned one or another characteristic mean they are the only ones that compose them. Our objective is to offer a range that allows us to understand the great diversity of topics, strategies, methodologies or technologies used in training programmes.

As we can see, from this brief recapitulation, there are no general pedagogical or thematic formulas for all processes. Each one is and must remain unique. It is true that there are key concepts and knowledge that are shared in community networks, particularly those related to technical issues. However, thinking about the diversity that characterises these types of experiences, the training we aspire to is one that reinforces and accompanies the organisational, political, cultural, identity and economic forms of the communities in which they are implemented.

This concept implies that each training process requires the analysis of the context, the territories, the ways of life and the ways of sharing the knowledge that the communities own. It also means integrating critical analysis of technology,

technical knowledge, regulatory environment, forms of sustainability, etc. Even more importantly, it requires a collective construction and joint responsibility between communities and organisations that complement a comprehensive process of exchange and strengthening of knowledge. This will generate networks of people capable of sharing their knowledge and supporting each other in the construction and strengthening of their experiences of community communication and telecommunications.

So far, we have wanted to present a small conceptual base that guides the arguments and recommendations that we will give in the following sections. Next, we share our experience in the development of a training programme with the vision that we propose in this guide.



1.2

TECHIO COMUNITARIO, A METHODOLOGICAL EXPERIENCE FROM WHICH THIS PROPOSAL BEGINS

In this section we will share the training experience that has allowed us to structure this guide's methodology. We understand that the technological training needs in the communities and the way to deal with them are remarkably diverse. However, we believe that participatory methodologies are a fundamental basis if the collective construction of a training programme is sought.

We do not just want to tell this story as something successful to be applied identically in other contexts. The truth is that we have had many challenges to face and the path is in constant construction. Neither do we want to present a single way to do it, we know that there can be many ways to develop this type of training process.

However, for us who have written this guide, Techio Comunitario finds its strength in the collective methodology of its design and implementation, in the diversity of knowledge, experiences and ways of sharing knowledge. Therefore, we hope that this short story can resonate with your own experiences and routes to follow.

TECHIO COMUNITARIO is a contextualised and particular training experience that cannot be exactly replicated in other territories, but whose collective construction methodology is the benchmark for the development of specific training programmes suitable for other contexts.

1.2.1 WHAT IS TECHIO COMUNITARIO?

Techio Comunitario is a process that has generated a community for the exchange of experiences and knowledge, where training is based not on technology itself, but on community values and principles. Its purpose has been to accompany the paths towards technological autonomy that the communities have decided to undertake, strengthening different technical and organisational capacities, as well as creating a technical community promoters' network who exchange knowledge and experiences in order to build or consolidate communication media and telecommunications projects in their territories.

The programme is composed of a series of modules that combine technical topics (for example, basic electricity and electronics or the structure of communication networks) with social, sustainability, legal and ethical topics. In addition, those who participate can specialise in the use of specific technologies: broadcasting, community internet networks and community cell phone networks.³⁶ The training methodologies include pedagogies derived from the ways of sharing knowledge of the Indigenous peoples of Mexico, popular education experiences and interaction created in societies of free knowledge.

So far, two face-to-face editions have been developed in Mexico; the first in 2016-2017³⁷ coordinated by Redes A.C. and Palabra Radio, and the second in 2018-2019³⁸ coordinated by Red de Comunicadores Boca de Polen A.C. In each of them, the participants, women and men, attended a monthly face-to-face module in different communities of the country. The logistical and academic organisation of each of the modules was the responsibility of different organisations that make up the programme's advisory committee. More than 50 promoters and technical promoters have graduated from seven states of Mexico³⁹ from both editions.

Based on this experience, other training processes have been developed that have taken shape thanks to the participatory methodology of Techio Comunitario. On one hand, the Training Programme for Technical Promoters and Promoters in Telecommunications and Broadcasting in Indigenous Communities⁴⁰ that is developed in collaboration with the International Telecommunications Union (ITU). This programme, aimed at Indigenous communities in Latin America, is made up of a series of five online modules and a training camp and face-to-face training. In the first edition of the programme, 20 people from 11 countries in the region graduated. At the time of writing this guide, the call for the second edition of the programme is about to close.

³⁶ The explanation of each module and topics addressed can be consulted in Annex 2 of this guide.

³⁷ <https://youtu.be/452KCVIjuys>

³⁸ https://youtu.be/B2D4_UuCWpk

³⁹ Chiapas, Chihuahua, Estado de México, Guerrero, Michoacán, Puebla and Oaxaca.

⁴⁰ <https://youtu.be/iPgLFQQAdhU>

On the other hand, in 2019 the Mexican edition on the Abya Yala Community Networks Seedbed⁴¹ was held in Cherán K'eri, Michoacán. This training process took place thanks to the articulation between Redes A.C. and AlterMundi, with the support of APC. It consisted of introductory workshops to community networks and participatory design of intranets, aimed at graduates of Techio Comunitario and the community itself. The objective, in addition to a participatory installation of Cherán's network, was to establish a space for the continuity of the graduates of the first two generations of Techio Comunitario.

Following this methodology and collaboration between the same organisations, in November 2019, the experience of the Abya Yala Community Networks Seedbed was developed in Las Calles, Córdoba, Argentina.⁴² The convening organisations on this occasion were AlterMundi, Comunidad, Trabajo y Organización (CTO), Redes por la Diversidad, Equidad y Sustentabilidad A.C., and Pañuelos en Rebeldía. For three days experiences and knowledge about digital communication and community networks were shared from a vision anchored in the territory. At the end of this workshop, the Valle Reinicia community network was launched.

We believe that the experience of the Seedbed can be replicable in diverse territories, and that it allows to develop meeting and training spaces for people who work in community communication, with the aim of accompanying the birth of community networks, nourished by local territorial experiences of social organisation. ✨

⁴¹ <https://youtu.be/5j7njxEWtmc>

⁴² <https://altermundi.net/2020/03/02/sembrando-redes-comunitarias-la-experiencia-del-semillero-con-la-cto/>

1.2.2 HOW DID THIS COLLECTIVE DREAM COME ABOUT?



The use of technologies in Indigenous communication in Mexico has a long journey. In this process, which began between the 1950s and 1960s with the creation of the first community radio stations, people, organisations and communities have found in the tools of communication a way to pursue their goals and achieve their dreams. Starting in the first decade of this century, the quantitative and qualitative growth of grassroots communication experiences in the country has been exponential, with an increase in the variety of technologies, forms of organisation and sustainability, content production and training processes.⁴³

A fundamental aspect has been the training of Indigenous women and men communicators. From the first experiences, it was observed that the way to potentiate these processes was through the exchange of experiences and knowledge between

⁴³ We are not able to provide here a detailed historical account of Indigenous communication in the country, but it seems more important to think about the resonances that have generated these experiences in building a scenario that today includes an exceptionally large variety of forms of communication mediated by technology from the peoples, and the importance that training has had on this path. To learn more about this story, we recommend exploring the first chapter of this doctoral thesis: Baca-Feldman, C. (2017). *Resonant Communication Experiences in Oaxaca, Mexico: Possibilities, Limits and Contradictions of the Communication Process in Capitalism*. Universidad Autónoma de Puebla. <https://bit.ly/36U72Au>

those who communicated in their territories, trying to break down the barriers of what is taught in universities or educational institutions about how they should create messages. This gradually generated a group of people committed to these training processes who met the training needs detected in the creation and dissemination of content, the legal framework of telecommunications, the sustainability of media and related technical issues.

In 2012, a group of people and organisations linked to these training processes began a reflection⁴⁴ on our practice in order to reinforce and rethink what we had been doing, often in isolation. To achieve this objective, we rely on the methodological principles of Participatory Action Research (PAR). This allowed us to learn more about the Indigenous communication training needs that existed in the communities, along with the challenges and achievements of the processes that were already underway. At the end of the process, we built a scenario based on the systematisation of experiences of people and organisations involved in the formation and development of community and Indigenous communication and telecommunications projects in Mexico.

⁴⁴ The result of our reflections during this research process and from the workshop that took place in 2014, in Oaxaca city, was systematised in this book: Cruz, B., & Huerta, E. (2014). *Haciendo Milpa. Memoria del Taller Estrategias de Apoyo a la Formación de Comunicadores Indígenas*. Redes por la Diversidad, Equidad y Sustentabilidad A.C. <https://bit.ly/3oVp8aO>

HACIENDO MILPA

As part of this research process, in a workshop for trainers in community communication that took place in 2014 in the city of Oaxaca, we dared to rethink our communication work. We realised that Indigenous communication in Mexico is like a milpa. In this way of sowing and harvesting typical of the Mesoamerican communities, the land is owned by everyone, the harvest is obtained through an ecosystem of very varied species that together make the fruits of the earth produce; but it is also a collective space for learning and work in which each of the people, plants and animals that collaborate in it performs important tasks for its sustainability.

Thus, Indigenous communication is a process that starts from the joint responsibility and participation of the community as a whole, where there is a strong link with the territory and culture, and in which the fruits of this work are shared among everyone.

Through this research we corroborated something that we constantly saw from our practice. Within community communication processes, a recurring need over the years has been the creation of technical capacities. The difficulties in being able to solve the technical problems that arise relate to a dependence on someone outside whose specialised knowledge generally implies high costs. Thus, a weakness, which becomes the opportunity to strengthen these processes, is the external dependence on the technological part of telecommunications, both in terms of technical knowledge and equipment to solve problems and provide the support that communities need.

In this way, the idea of having adequate spaces where technical needs can be solved began to emerge. Subsequently, this was complemented with the idea of promoting a training programme for people who are already part of the community communication processes and who can learn to solve the technical issues at a more specialised level, relying on spaces that have the tools and equipment needed to learn and practice.

In these years of reflection, between 2012 and 2016, we found different needs for technical training in Mexico's community and Indigenous media:

✦ **Dependency:** One of the main problems that community radio stations faced was depending on people outside the collective and the community to solve technical issues that ranged from moving a cable to make the radio play, to fixing burned transmitters, building their own antennas, and general maintenance of their technical equipment.

✦ **Lack of an articulated training process:** Although we have seen a long journey and a vast accumulated experience in the field of training, we realised that a more articulated training process was needed. We saw it as necessary to build that space from different perspectives: with academia, social organisations, independent communicators and communicators from the media, for it to be as enriching as possible.

✦ **Exchange spaces:** We observed that it was necessary for the people in charge of technical areas in community media to have spaces to share their experiences. The idea was to be able to generate the necessary mechanisms to form a network of technical promoters, women and men who would accompany each other and share the knowledge they were acquiring.

✦ **Gender issues:** We saw a need to break with the idea that technical areas are only men's issues and encourage the involvement of women in this field.

✦ **Technological laboratories:** We understood that technical training should be accompanied by access to the necessary tools for the installation and solution of common failures in communication and telecommunications projects. This is how, along with the training programme, technological laboratories were created to provide access to tools, and provide meeting spaces between technical promoters.⁴⁵

This **research and systematisation process** was fundamental for the subsequent development of the process for three main reasons: it helped us to consolidate a network of people who could take on the challenges involved in carrying out a project of this nature; it allowed us to understand the diverse training needs and the way in which a rich exchange of knowledge could be articulated to meet them; and finally, it gave us the space to reflect on our educational practices that allowed the combination of methodologies and themes from a diversity of voices. ✦

⁴⁵ So far, we have developed two laboratories: one in the office of Red de Comunicadores Boca de Polen A.C. in San Cristobal de las Casas, Chiapas, and another in the office of Telecomunicaciones Indígenas Comunitarias A.C. in Oaxaca, Oaxaca. Two others are under development in the Sierra Norte de Puebla and on the Isthmus of Tehuantepec in Oaxaca. The challenges have been many for the consolidation of the laboratories and we consider this to be an important area to strengthen within Techio Comunitario processes.



1.2.3 HOW DO WE START WORKING TO IMPLEMENT THE PROGRAMME?

The fundamental principle of Techio Comunitario has been the generation of a contextualised and localised training process. We start from the premise that contents, ways of learning and community values are particular to each culture and have specific references that are expressed in ways of being, working and thinking in each region and territory.

The values that have been considered for this construction are rooted in the ways of life of some Indigenous peoples of Mexico, particularly those who live in the southern areas, such as Oaxaca. Hence, the contents and methodologies used have as an important reference the systematisation of the way of life of the peoples of the Oaxacan Mountains, known as *Comunalidad*.⁴⁶ A basic principle of *Comunalidad* is *tequio*, the collective work that communities develop to shape their dreams and satisfy their needs. Therefore, the programme's name takes this principle as a reference in combination with tech (abbreviation of technology in English).

⁴⁶ *Comunalidad* is a systematisation of the way of life of the Indigenous peoples of the Sierras Mixe and Juárez de Oaxaca. Its main references are Jaime Martínez Luna from Guelatao de Juárez, and Floriberto Díaz from Santa María Tlahuitoltepec Mixe. Both had similar characteristics to portray the ways of life of their communities and used the same term to achieve their objectives, despite having only met once in person. For Martínez Luna, there are four axes that guide life in these communities: territory, organisational form, collective work and party. These are thought in a constant dynamic of imposition and resistance. It is possible to learn more about *Comunalidad* in this article by Jaime Martínez Luna: Martínez, J. (2015, 27 October). *Comunalidad as the Axis of Oaxacan Thought in Mexico*. *Upside Down World*. <http://upsidedownworld.org/archives/mexico/comunalidad-axis-of-oaxacan-thought/>

On the other hand, the conformation of the Techio Comunitario **advisory committee** has been the axis and the key so that the objectives that we collectively set can be pursued. The advisory committee is composed of people who have extensive experience in Indigenous communication issues and who participate in various spaces such as academia, civil society organisations or directly in Indigenous and community media. Each person and organisation has specific methodologies and knowledge of different parts of the training process, so when they come together, they make up a whole of what is necessary to know in order to create and operate media in Indigenous communities.

In addition to supporting the **design of the programme**, the advisory committee participates in **logistical and academic tasks** of each of the modules. In this sense, organisations and specialists are those who teach the modules, providing diversity on the topics to be shared and their approach.

It should be noted that the intention of Techio Comunitario is not to be the project of a specific organisation. In fact, we have tried to ensure that the tasks that are under the responsibility of the general coordination are carried out by different organisations. For this reason, in 2018, Red de Comunicadores Boca de Polen A.C. decided to coordinate the implementation of the second edition.

The advisory committee has been in constant transformation. We have had the participation of people who contribute on specific issues, and others have joined along the way, so it acts more as an informal network that collaborates at particular times, than an institutionalised work group. The people that integrate this committee have collaborated in countless projects, so through practice and the exchange of experiences from all of us, we have consolidated a group of organisations and individuals committed to this training programme.

This process, which may appear to have no established form, has its solid base in the roots of the principles, values and ways of life of the Indigenous communities of Mexico,⁴⁷ along with the construction and shared responsibilities that emanate from the figure of the advisory committee.

⁴⁷ It would be almost an impossible task to define in a list all these principles, values and ways of life of each one of the Indigenous peoples of Mexico. In addition, this would just lead us to eliminate the particularities they have. However, some characteristics that they share are: knowledge based on practical experience, the importance of oral communication and one's own language, collective work (for example, *tequio*, *minga* or *mano vuelta*), integral and spiritual relationship with the territory, collective decision making, or the party as an expression of the realisation of the achievements and dreams woven in community. Each of these principles have many different forms of expression between the communities and the peoples that inhabit the country. Surely there are many others, but these are the ones that we have considered key to the training programme that we have designed.

1.2.4 WHAT CHALLENGES HAVE WE FACED?

As we pointed out, the journey has not been easy, and we have constantly had to reflect on our work. We have come a long way, but there are still many challenges for the consolidation of the training programme that we want to share:



✦ **What we understand by training:** We have had to question and transform, over and over again, many ideas of what it means to train and be trained. We have been rebuilding our pedagogies from the practical experience of training.

✦ **Diverse work logics:** Understanding the logics in the way of working of the people and organisations that are part of the process has not been easy. The organisations that coordinate and participate in it work with quite different times and logics.

✦ **Detechnologise:** We have had to constantly understand and remind ourselves that the ultimate goals of communication projects in communities actually have little to do with technologies.

✦ **Transform our methodologies:** We constantly need to reconfigure and adapt methodologies for sharing technical knowledge in a way that is closer to the ways of sharing the knowledge of Indigenous peoples.

✦ **Women in technology:** We have been faced with a myriad of entrenched ideas about technologies that define who and how they participate in these processes. We have had to frequently struggle with the idea that women cannot participate in technical issues, that this is a men's thing. Therefore, it has been an important task to create the conditions for more women to participate and complete the training process, as well as involving more women in the training team.

✦ **Online education:** The basic methodology of Techio Comunitario is training through practice, in the territory and through the sharing of knowledge. Online education, particularly in the programme developed with ITU, poses many challenges for training, but with the experience that is generated it is possible to face some difficulties.

✦ **Specialisation programme:** Although it is not the purpose of the programme to develop specialists in technical subjects, we do see it as necessary to build a specialisation programme in the subjects addressed in the training programme for people who wish to study them in depth. This implies rethinking the curricular structure of the programme and looking for links with other training spaces that are not necessarily linked with Indigenous communities, such as universities, technological institutes and government agencies.

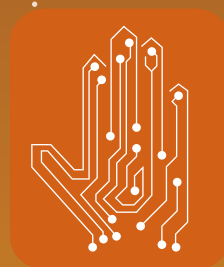
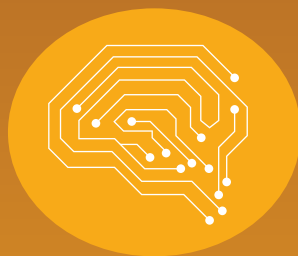
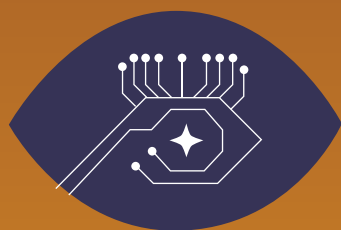
Although there are many challenges to be solved, the truth is Techio Comunitario is a process in constant adaptation; it is taking shape according to the opportunities and needs that exist at certain times. The general objectives have been met, although the times and dynamics vary and respond to the needs of those who have participated. We have seen the fruits of the creation of a network of promoters in the communities, and basic knowledge that has been shared for the creation and operation of communication tools.

Therefore, as we said at the beginning of this section, we consider that this experience can be **a starting point**, not to replicate it identically in other contexts, but to observe its methodological proposal and generate training programmes that respond to the needs of the territories in which they are carried out. Based on our own experience, in the second part of the guide, we will share the dynamics and actions we consider necessary to achieve the objectives described in this brief reflection on training, community networks and technological autonomy.



PART 2:

SEE, THINK AND ACT:
A METHODOLOGICAL PROPOSAL
FOR THE CREATION OF TRAINING PROGRAMMES

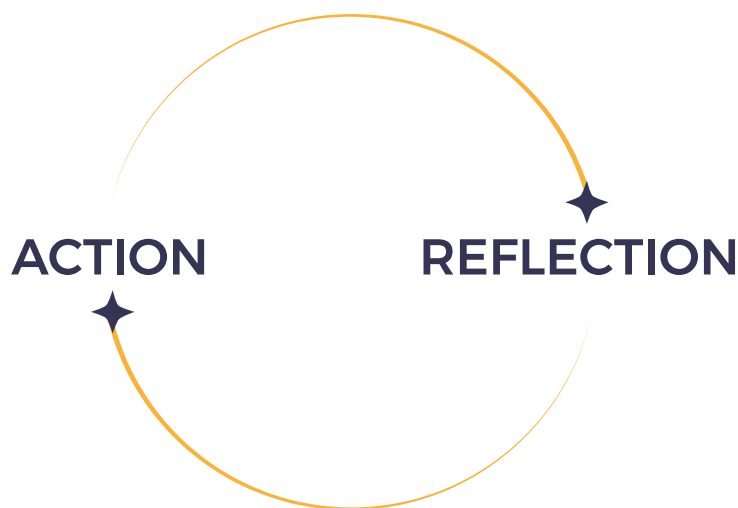


2.1

BRIEF DESCRIPTION OF PARTICIPATORY ACTION RESEARCH (PAR)

To generate pertinent and appropriate training programmes, we must start from a methodology that allows us to question what we consider to be true. For this, we need a space to think through, along with the people who will participate in the programme, **the existing training needs, the ways of working, the ways of sharing knowledge and the principles and values that will be the basis of the entire programme**. In other words, we need to have a space for systematic reflection in which we collectively question our own practices.

Participatory Action Research (PAR) is a methodology that allows us to open these possibilities and find the causes, objectives and dreams to develop in the training programme. In general, PAR presents an opportunity to reflect on our practices, put a stop to the dynamics of our work to evaluate them and design improvement processes. It is a constant cycle between reflection and action:



The main purpose of this methodology is to provide the means for a group of people, in a particular place and context, to participate in systematic research in order to design an appropriate way to achieve a common desired goal and to evaluate its effectiveness.

PAR is, therefore, a **participatory process** with a systematic approach to research, where the person who investigates is part of an experience and knowledge exchange community, with the intention to collaborate in the diagnosis of a problem or in the achievement of a common goal, deepening their understanding and exploring its solutions.

This methodology is based on the assumption that all people whose lives are affected by the problem, or who are committed to achieving a desired goal, must participate in the inquiry process that takes place in a **cycle: see-think-act**, taking into account the social, cultural, interaction and emotional factors that affect all human activity. Although normally these three phases are the best known, we believe it is important to add a **scenario building phase at the beginning and an evaluation phase at the end**.

In general, all phases refer to a collaborative approach, which builds a community of training and reflection through cooperation and consensus, positive social relationships and their own communication styles.

The phases that we identify in this process, following Ernest T. Stringer's ideas presented in his book *Action Research* (2007),⁴⁸ are:

- ✦ **Scenario-building process:** The stage in which the research is built, the experience and knowledge exchange community is formed, and the mechanisms that will be carried out in the subsequent stages are outlined.

- ✦ **Seeing phase:** Through dialogue with the people who are part of the experience and knowledge exchange community, the context is analysed, observing the needs, principles, values, objectives, etc., that need to be considered.

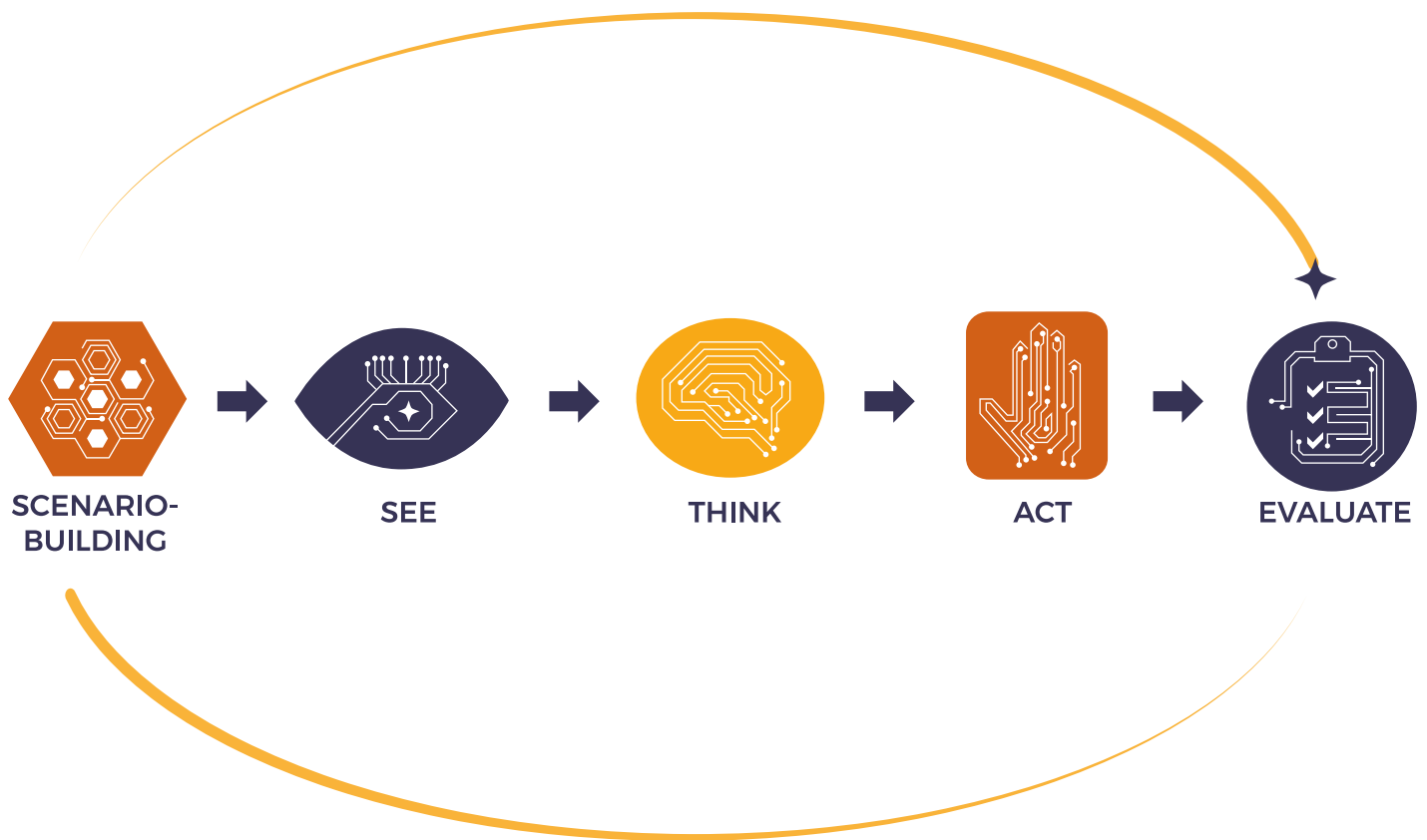
- ✦ **Thinking phase:** Based on the results of the previous phases, the working group or the experience and knowledge exchange community, thinks of the best ways to provide solutions to the problems presented.

⁴⁸ Stringer, E. T. (2007). *Action Research*. Sage Publications. <https://bit.ly/36Smtch>

✦ **Acting phase:** The actions defined in the previous phase are carried out, through the participation of the people involved in the research process and links with other key actors in the process within and outside the community.

✦ **Evaluation phase:** Once the process is finished, it is necessary to evaluate the results, see what successes were achieved and what elements can be improved. This allows us to start a new cycle of research.

Each of these phases is also presented as a continuous cycle that restarts every time the objectives are achieved:



The experience and knowledge exchange community is formed by different people or stakeholders, who participate in a process of obtaining information, reflecting on it to transform their understanding and think about its nature. Then this analysis is applied to plans for problem solving or achieving a shared interest. This stage of action is evaluated through a new compilation of information, in which a new phase of reflection is opened, initiating a new cycle.

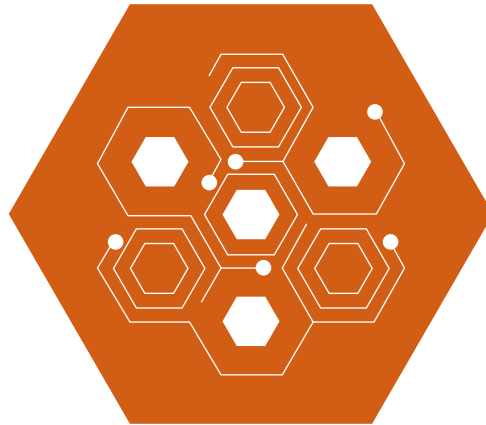


PAR works as a process in which the communities, with the support of the person coordinating the research, provide practical solutions to the objectives that are set. The methodology offers a process of reflection and diagnosis of the reality in which different processes will be developed and based on this, possible solutions can be knit together collectively. For all this, we think that its use can provide the necessary results for the objectives pursued in this guide.

In the following sections we will describe some proposals for the implementation of each of the PAR phases for the creation of training programmes.

2.2

SCENARIO-BUILDING PHASE



This first phase is the foundation of the work that will be developed in the following stages. Normally, this first stage will be facilitated by the organisation that promotes the process, and it is an exploratory phase in which the possibilities of articulation and execution of the research and action project are defined.

Some questions that can guide the participatory design of training programmes in this phase are:

- ✦ Why is it important to create a training programme in our context? How does this relate to our own organisation or collective? Why do we want to do it?
- ✦ What processes already exist? How is the context of community networking is organised in our context?
- ✦ Who is part of this picture? How are they articulated?
- ✦ How can we design a PAR project in our own context? What elements, people, methodologies, spaces, etc., are necessary for this?

WHO DO WE INVITE?

Let us summon women and men who are involved in community processes, who have experience in training, who accompany or take part in social communication projects and who are willing to work as a team. They can be people from civil associations, groups, academic spaces, communities, organised groups or other media. In short, people who have a social commitment and know the way of life, realities and needs of the localities and projects to which the training programme will be directed.

This group is not closed, and more people and organisations may be integrated as the needs of each training programme are known in the following phases.

On one hand, it is required that the organisation that promotes the process can reflect on its own practice and the objectives it pursues by carrying out the project that is about to begin. By observing if this objective is related to your future plans, your principles and dreams will help to be clear about the reasons why it is necessary to devote the time it requires.

On the other hand, it is important to make a first documentary review about the training experiences that have been developed in the territory with the information that exists on the internet, books, etc. or from our own knowledge. We must visualise the history of training on topics related to what we are interested in promoting and think about what characteristics they have or had. This will help us to have an overview of what we will have to do, which people to invite, etc.

Finally, in this phase we make up the work team or advisory committee, as we call it at Techio Comunitario. To do this, we can start mapping actors, thinking about how they are related, what activities they carry out together, what objectives they have, principles, etc. In this phase, we will communicate informally with those who we think can participate in the process and we invite them, trying to know their expectations and why they would like to participate.

With this information is possible to start planning the next phase in which we will look deeper into the context, although in this stage we will already have some elements that allow some understanding of the context and its nature.

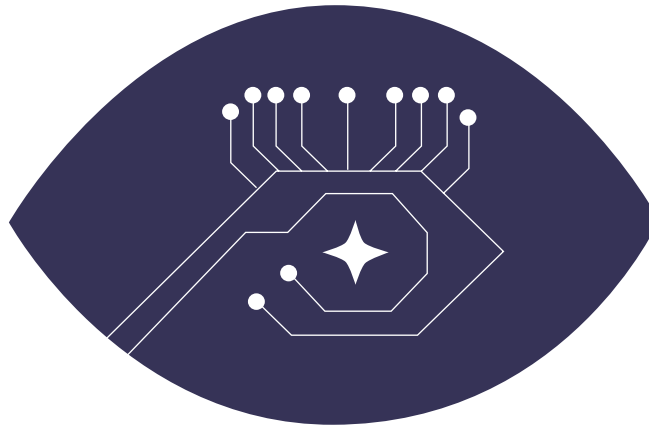
NOTE:

Not everything that we will get to know in this and the next stage is completely new. There are many things we already know and it is important to consider this knowledge, relations and experiences.



2.3

SEEING PHASE



Once we have reflected on the reasons for doing the training programme, we have invited key people to participate in it, and we have an overview of the context, the next phase involves making a much more detailed preview. In the seeing phase, information is collected to allow understanding of the experience and perspective of the different people involved and interested and, mainly, of those who are affected by or have influence on the subject investigated.

In the seeing phase we must have an open mind to understand what each person involved in the research wants to tell us. Their knowledge and experiences will be the guide to clarify the problems, modes, methodologies and training issues that will be addressed in the following phases.

The techniques recommended in this phase and, in general in PAR, are qualitative. This allows us to explore not only the “what” of things but also the why, how and what for. This depends on the circumstances of each process; for example, in-depth interviews, group dialogues or workshops can be carried out. Each technique has its own characteristics, advantages and disadvantages, but their combination usually generates interesting reflection processes.

In this phase, the perspectives and experiences of the people involved in the experience and knowledge exchange community are collected.

The experience that the construction of Techio Comunitario has left us is that success does not reside in the content of each module. On the contrary, its strength lies in the creation of an experience and knowledge exchange community that is based on the particular community values that govern life in the territory, for the understanding, use and transformation of technologies, considering numerous challenges needed to build trust and equality along the process.



The seeing phase enables understanding values, principles and modes of community organisation that occur in the territories that are the core of the structure and methodology of each training programme. The questions to be answered in this design phase of the training programme relate with at least five areas that we can classify as follows:

✦ SPACES

- Are there communication training networks and/or community networks in the territory?
- If they do exist, how are these networks articulated? What are their nodes?
- In which spaces are they linked?
- How do they support each other?

✦ ACTORS

- What actors are central to training?
- Are the felt training needs of the communities being met?
- Do more actors have to be incorporated into these networks?

✦ CHARACTERISTICS OF THE TRAINING PROCESSES

- What are the key actors working on?
- What topics and content do the training processes they carry out address?
- What type of methodologies do they rely on?
- What materials do they use? How do they get them?
- How could they strengthen the accompanying training processes?

✦ VALUES, PRINCIPLES AND WAYS OF CARRYING OUT THE TRAINING

- What principles and values do you consider fundamental as a guide in working with the communities you accompany through training? How are these values and principles grounded in workshops, courses, mentoring, etc.? What do they develop?
- How are communities organised to solve their needs and follow up on their dreams? How should training be linked to these ways of working and sharing knowledge?
- What training methodologies have you explored in your experience?

✦ COMMUNICATION AND TRAINING NEEDS IN COMMUNITIES

- How do communities currently communicate? What particular forms, such as the assembly, roads, spaces, ICT, etc. use?
- How do you dream of your own communication system? What characteristics would it have? How would it be organised? What technologies would you use?
- What knowledge of communication do communities have? What other processes do you need to generate?

*At Techio Comunitario, after the interview phase and the meeting of those who participated in the research, we published a book that has served as a constant guide in each evaluation and reflection that we carry out on the process we have carried out: Cruz, B., & Huerta, E. (2014). **Haciendo Milpa. Memoria del taller: Estrategias de apoyo a la Formación de Comunicadores Indígenas.** Redes por la Diversidad, Equidad y Sustentabilidad A.C.*

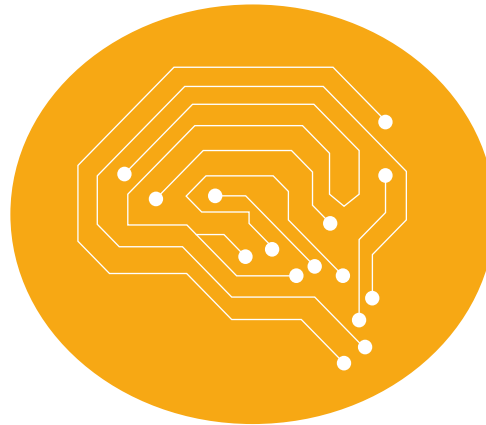
In this phase it is important to leave the questions to be explored with each person involved in the investigation sufficiently open. This aims to build a panorama from the results of the research itself, not to start from assumptions of what it is believed to be important from the person organising the process.



Once all the information has been obtained in the stage of viewing and constructing the stage, it is very important to systematise it. In this process we will be able to reaffirm all the elements for the design and implementation of the training programme, through reflection on all the information found and its organisation based on categories of analysis.

2.4

THINKING PHASE



In PAR, the thinking phase includes looking for an explanatory framework that helps the experience and knowledge sharing community to understand that problems do not exist in isolation, but are part of a complex network of events, activities, perceptions, beliefs, values, routines, institutions and cultural systems that are maintained throughout life. **The main goal is to understand the nature of related events:** how and why things happen in a certain way. It seeks to know and understand the problem / objective in question, through the systematisation of the information collected in the visualisation stage and express it in terms of use in daily life.

In other words, once we have the information about the context of training in the territory and the communities with which the programme will be developed, it is possible to understand what aspects and elements are key for its design and implementation. This is a phase of collective reflection in which the values, methodologies, themes, ways of working, etc., that will guide the training process as a whole are defined.

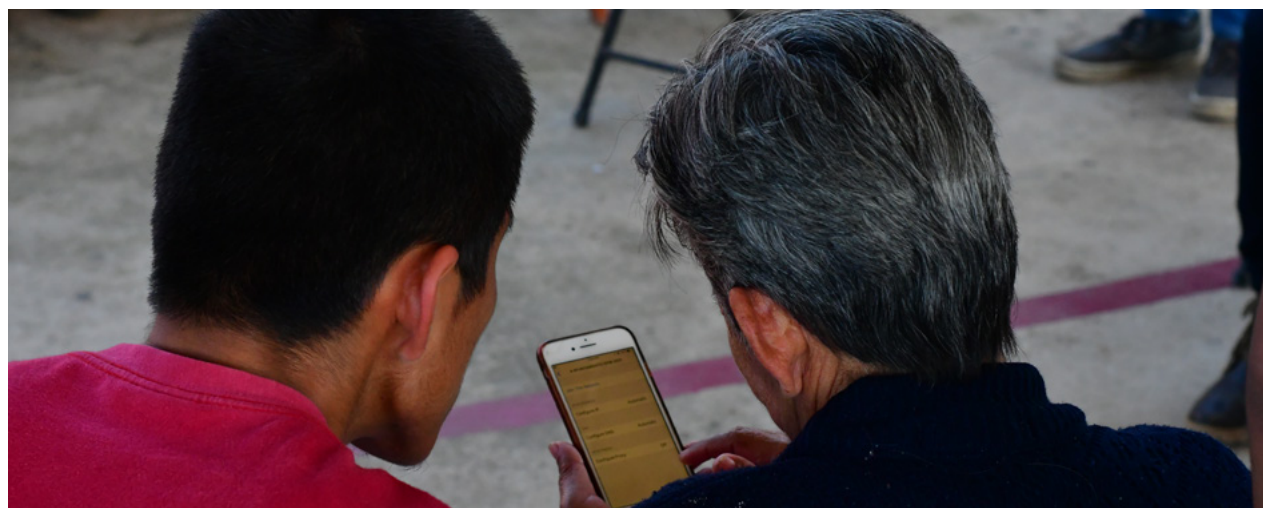
This phase can be complex, and the reflections should not only remain abstract but put into practice. Although the implementation of the actions is carried out in the next phase, this stage is where the way in which they will be structured is thought about.



This phase involves, besides reflection, building a work team or advisory committee that allows the design, implementation and evaluation of each training programme. Through collective creation and the diversity of views involved in the creation and consolidation of community communication and telecommunications projects, it will be possible to build a solid, diverse process with shared responsibilities.

Advisory committee meetings are important to achieving programme goals. In these, all the methodological, curricular, logistical and organisational aspects will be defined. Each of the meetings, their periodicity, duration, etc., depend on the specific contexts in which the programmes are developed, there are no unique guidelines for this.

Although the organisations that coordinate the training programme design will be those who develop the activities of these meetings, it is important for all those involved to participate in the structure they will have, the topics to be worked on, the logistical aspects, dynamics, etc. In this way, a participatory process will be achieved from the beginning of the programme design process.



Some of the activities we consider essential for the advisory committee to work on in this phase are:

- ✦ Establishment of principles and values that characterise this process
- ✦ Definition of the income profile of the people you want to reach from the location of the needs previously identified in the previous phases
- ✦ Curricular design of the training programme
- ✦ Construction of the call and selection of participants
- ✦ Timetable of activities
- ✦ Definition of an organisational structure that allows the equitable distribution of responsibilities for the different stages of the process
- ✦ Search for alliances necessary to carry out the programme
- ✦ Search for funds to cover programme costs
- ✦ Define the way to monitor the development of the project and consider the periodic evaluation of the activities that are being carried out.

This is how the training process is built from different points of view. It is inclusive, rich in experiences; ideas are dreamt collectively, and shared responsibilities are assumed.

We consider that there are two fundamental questions that the advisory committee must answer at this stage:

- *What principles, values, ways of working, contents or curricular structure are necessary to carry out the training programme?*
- *How do we organise to carry it out and what tasks and commitments does each person acquire in the process?*

Next, we will share some proposals for the execution of the tasks derived from these two questions.

2.4.1 METHODOLOGICAL DESIGN OF THE PROGRAMME

Each training programme is integrated from the needs, dreams and values that each advisory committee builds with their vision and the reality of their contexts, making use of the information collected in the previous phases. In the regions of Mexico, we can find different values rooted in ways of living with different environments. The contexts of other latitudes may or may not be shared with those that we can find in our country. For this reason, as we did in the previous phases, it is important that each committee analyses, knows and sees their environment as a starting point to define the values and personality that will make up their own process.

These needs, dreams and values are expressed in ways of working, organising, linking with the territory and sharing knowledge. Pedagogies that are relevant and appropriate to communities are part of this network of relationships between community members and their environment. Defining the methodology to be used does not mean reinventing the wheel and starting from scratch. It is more about transforming the contents and topics that are addressed in each training programme to the proper ways of understanding the world and of sharing knowledge of the communities.

Each training programme is integrated based on the needs. When defining the methodology, we must not make the communities adapt to our way of teaching. On the contrary, our way of teaching must adapt to the ways of sharing knowledge in communities.

We know and have experienced that this is a great challenge. Many times, the people who have learned in academia or in formal education processes, who often participate in the design of this type of training programmes, think that the only way to do it is through the pedagogies they have used. Particularly, knowledge exchange on technical issues is often extremely complicated. Perhaps this is since the technologies we use have not been designed by the communities, they do not respond directly to their ways of living and understanding themselves in the world.

However, **it is possible to transform these educational paradigms**. Pedagogies that are selected as the axis for the training process are important and must be considered according to the context and the references that exist in each territory.

It is not about having straitjackets that we cannot transform as time goes by or that must be replicated the same in all modules or workshops. Rather, we must establish the basic pedagogical principles that guide the training programme, but that are flexible enough to transform them according to the needs and practical experiences as they happen, without losing the personality and pedagogical tools of each person who facilitates a theme.

In Techio Comunitario we have combined different pedagogies that have worked for us as a base for each of the courses we have given:

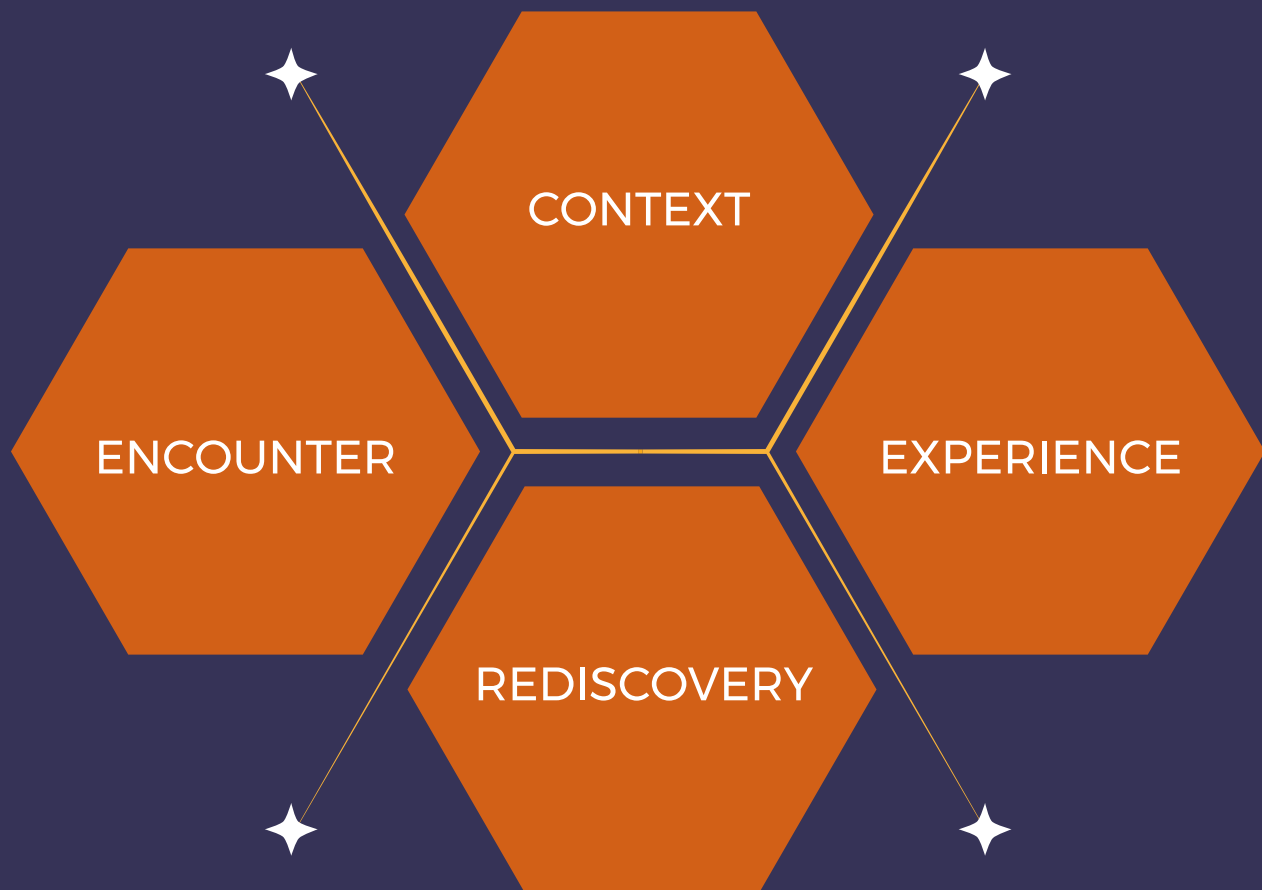
- ✦ The **forms of sharing knowledge of Indigenous peoples in Mexico**, which are closely related to their ways of life and the integral relationship with the territory. In these communities, a lot is learned through personal and collective experiences, in the organisational and decision-making processes, in the field work, in the family, in the party, in the *tequio* or work, in life itself.
- ✦ **Popular education**, as an important current in Latin America that starts from contextualised, practical and horizontal education.
- ✦ Since in the Indigenous communication and telecommunications processes a constant encounter is generated between the communities of specialists in technologies and the Indigenous communities, we have also found principles and ways of sharing knowledge in the **free knowledge societies** that we have replicated.

WHAT IF WE USE COMMON METAPHORS FOR THE TERRITORY OR OUR BODIES TO EXPLAIN TECHNICAL ISSUES?

Perhaps we could explain the elements that make up a computer with the parts of the body, mind and soul. Or perhaps we could explain how a community intranet works from a simile with a lake or a pond.

This use of metaphors, as an example, is one of the things we have learned from the implementation of Techio Comunitario and it is a process in which we work to improve the training process. We do not know if it is appropriate in other contexts, but in the communities we work with, results have been useful.

This combination results in a methodology with clear principles, but flexible enough to adapt to different circumstances and needs. Although this methodology has worked in the communities that Techio Comunitario supports, it cannot be the same for all training processes. As we pointed out, each context and territory has its own training referents and ways of sharing knowledge, and it is key to look at them in order to establish its own and contextualised methodology. However, we found four elements that we propose as key to consider in the methodological design of training programmes:



CONTEXT

Training must not only be adapted to the context but must be the guide throughout the process. To acquire knowledge, it is important that we relate the theoretical constructions to the practice in our own territories. Therefore, an important part of the process is putting into practice what is being shared in a real context and generating solutions to the problems that exist there.

ENCOUNTER

A training programme of this nature does not aim to generate specialists in each of the areas involved in community networks or the community media. It is more important that this community for the exchange of experiences and knowledge, which is created from it, is the mechanism for a mutual and constant accompaniment among its members. It is not about knowing everything, but about maintaining relationships that allow us to solve the problems we face.

EXPERIENCE

Starting from the fact that not only the facilitators or members of the advisory committee have knowledge and experience on the issues to be addressed. The people who participate in the training process have their experiences, knowledge and experiences about them. These are fundamental to the learning process. Therefore, the promotion of constant and horizontal dialogue should be a goal to be pursued.

REDISCOVERY

The rediscovery of the ability to create and transform the environment that surrounds us is another aspect to be reinforced. We are continually told what we can and cannot do, know or transform. However, a fundamental part of the creation of this type of training programmes is to disrupt and demystify these ideas and see that it is possible to think and do other forms of communication and to relate to technologies.

2.4.2 DESIGN OF THE CURRICULUM STRUCTURE OF THE PROGRAMME

As we mentioned in the introduction, when we talk about a training programme, we are referring to a set of activities and ways of exchanging knowledge for a particular purpose. In order to shape the structure of the programmes based on what we have observed in the previous stages, in the thinking phase, it is necessary for the advisory committee to answer some questions.

The answer to each of these questions, plus those that are added, will result in a general structure of the training process. Thinking about each of these aspects collectively will allow generating a series of guidelines and strategies that, later, will be applied by each workshop leader or facilitator. These elements of the programme are not fixed and immovable either; they can be transformed according to the things that we see in the implementation of the programme.

Although we may realise that there are other questions to be answered by the advisory committee in this phase, in general, we can think of a process of curriculum design of the programme in the stage of thinking that would consider these elements:





WHAT IS THE GRADUATE'S PROFILE?

Thinking about the graduation profile (the skills, attitudes and aptitudes we want to achieve for those who participate in the programme) allows us to realise what issues need to be addressed so that the training responds to them.

It is important that the graduate's profile is organised into three broad areas: knowledge, skills and aptitudes. This is because training is not only about acquiring notions about certain things or learning certain processes, but also rather a comprehensive process of reflection in which the people who participate develop ways of understanding their environment and relating to it that they transform on the personal, community or professional levels.



WHICH PEOPLE AND ORGANISATIONS DO WE WANT TO INVITE? WHAT CHARACTERISTICS DO WE LOOK FOR IN THEM?

Once we have defined the profile, we dream of for the people who graduate from the programme, it is important to think about what characteristics and previous experiences the people who are going to enter would have. Many times, we are already clear about this in the previous stages or due to other activities and links that we have generated in the past, but in this phase, the advisory committee must devise the best way to include the people and organisations it considers essential in the programme.

As a result, we will have the definition of the bases of the call to participate in the programme. A good part of the success of the programme is related to how we generate this call, what guidelines we follow and how we select the people who will participate. Therefore, some aspects must be considered in its construction, such as:

- ✦ Define whether it will be open or not. If it is aimed only at people from certain previously selected organisations or communities, or if people who are not known but who may have the desired characteristics can participate.

- ◆ Establish clear participation requirements. For example, at Techio Comunitario it was especially important that the participants were active in a communication project in their communities, so two entry requirements were: letters of support from their organisation and from the community authority.
- ◆ Encourage the participation of women through an explicit call for organisations and communities to propose their participation. It is important to demonstrate during the call that this is a safe space for women to learn, since they are often diminished by men in educational spaces. This helps to gradually transform the existing gender paradigms regarding technologies.
- ◆ Make clear in the call the objectives and general schedule of the programme, times and places where it will take place, who calls, if there will be scholarships or some type of financial support for participants, if it will cost or not, etc.
- ◆ Define the commitments they acquire, both those who organise the programme and those who participate in it.

In addition to the definitions that the call will have, in this phase the number of people who will be able to participate in the programme and the way in which they will be selected must be defined. Taking care of this selection will allow the constitution and enrichment of a community for the exchange of experiences and knowledge with similar interests and needs.

To do this, you can choose an application form to have a first selection of participants and then, later, the advisory committee would conduct interviews to better understand the applicants and thus decide collectively.

Having several tools for selection helps make it much more precise. In our experience, apart from the application submitted, we conducted personal interviews with those who we considered could be part of this community, based on the information that they had sent us in the application form. The interviews allowed the treatment to be more direct, humane and fluid. This allowed us to understand more clearly the needs of the community processes that they were applying and the commitment they were making.

3

WHAT ARE THE TOPICS TO BE ADDRESSED AND HOW DO WE GROUP THEM?

As we know, the creation and consolidation of community communication or telecommunications projects have many elements that allow or not their sustainability. Some are technical, organisational, sustainability, legal, technology choice, critical analysis of technologies, spectrum operation or the creation and dissemination of local content.

For the process to be comprehensive, we consider that it is important that those who participate in these communication experiences know the complete structure. It is true, there will be people who have more interest or skills for certain topics, so it is necessary to look for mechanisms so that they can specialise in them. However, if we start from the idea that what distinguishes the media or community networks is their organisational and participatory process, then people must know and understand all the areas that make it possible. In this sense, an important task in the thinking phase is to collectively define the topics to be addressed in the training programme, based on the results obtained in the previous stages.

The answer to this question can be given in the form of brainstorming, in which we write down all the issues that come to mind and that we consider important to address. Once we are aware of all these topics, we can group them thematically into modules, workshops or activities that combine them and thus form the complete structure of the programme.





WHAT TYPE OF CURRICULAR STRUCTURE IS APPROPRIATE?

Once the topics have been grouped, it is time to decide how we will carry out the training activities. The structure that is designed will offer the possibilities of meeting the objectives of the programme, such as strengthening the network and understanding the elements that make up community communication and telecommunications projects. The options are very varied and respond, among others, to logistical, pedagogical, contextual, organisational and geographical aspects.⁴⁹

For example, in the two face-to-face generations of Techio Comunitario, a modular structure was chosen in which there was a common core and three specialisations. The modules were held in different communities and the participants travelled every month to take them. In the international programme in collaboration with ITU, five online modules and a 10- day face-to-face camp were developed. Both decisions responded to the specific contexts of each programme.

In the first case, it was possible to bring people together in person on a constant basis, but in the second, being international, a single face-to-face training event was required because the costs and time did not allow it to be done otherwise.

Each context presents challenges for the implementation of training programmes. The life environments of the participants (economic, geographic, work, family or political commitments, the other tasks they perform, gender or family life) are important factors to consider in this design. Also, the characteristics and possibilities of the programme, such as the funds available, the commitments with the funders, the territorial space to be covered, the conditions of transport or internet access in the communities, the other projects committed, etc. Based on these, we can think of a modular structure in which the group meets every so often for a few days, one that is through a single event of several days, an online training or combinations of them.

⁴⁹ The COVID-19 pandemic is an example of how the context can transform the plans we have. We may think that the best way to do the programme is in person (on which we would strongly agree), but in a situation of this nature we must prepare to transform those plans and know how we can address them through other mechanisms.



CAN WE DEVELOP SOME PARTS OF THE PROGRAMME FACE-TO-FACE OR ONLINE?

The answer to this question is complex and depends, once again, on the specific characteristics of the context and the objectives of the training programme. Both modalities have important challenges to face, and it is important to consider them in the design of the programme.

Face-to-face training is usually very enriching. Relationships are achieved through interaction in the exchange of knowledge, but also in distraction spaces, food, moments of rest and partying, etc. All of this strengthens the relationships between those who participate in the process and that can continue virtually.

In the same way, practical training, through problem solving in real contexts, is one of the ways in which participants can better understand the issues to be addressed. At Techio Comunitario, each module is taught in different communities, relating each topic to specific needs to be addressed. For example, if the topics were broadcasting or cell phone, the goal was to improve radio transmission or to install a radio base. This generates direct experiences in the territory and with the people of the community, which allows us to understand the dreams and felt needs that are addressed through communication or telecommunications projects.

Some of the challenges of conducting training programmes in person are:

- ✦ They are more expensive since they involve logistical aspects such as transportation, lodging, food, space rental, etc.
- ✦ Coordination of all logistics areas takes a lot of effort and requires the coordinating organisation to dedicate enough time to it.
- ✦ For the participants and facilitators, it means being fully in the activity for the duration of the training, which can represent timetabling problems.
- ✦ Sometimes, if activities take place outside, the weather may not be ideal and may even cause planned activities to be cancelled.

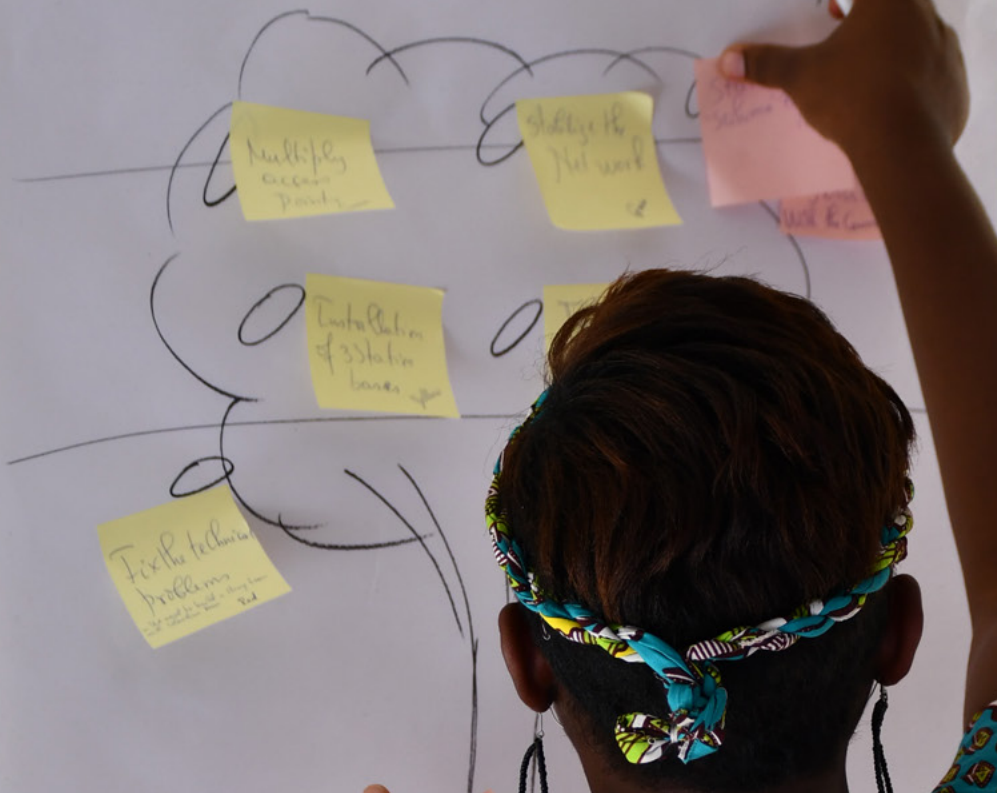
- ✦ Travel times of each person who participates in the activity must be considered, which can imply fatigue for those who live further away or who do not have good transport services within reach.

On the other hand, ICTs provide us with various tools to be able to connect remotely and share our experiences and knowledge, or to access endless materials on those topics we want to investigate. However, and as has been demonstrated with the COVID-19 pandemic, although online training offers us many advantages, there are also many disadvantages to consider:

- ✦ If we are working with community connectivity projects, it is most likely the communities do not have access to telecommunications services. On the other hand, even if coverage is available, there are many other access barriers that are also part of the problems that we would have to face in an online programme.
- ✦ If the objective is to create a network of technical promoters, women and men, who accompany each other in the communities, the interaction that is achieved online is not as strong as that which occurs in face-to-face processes.
- ✦ The best way to understand the topics is from a process that combines theory with practice in a real context. Online this is complicated and, although we can ask that practical activities be carried out in their communities, the accompaniment that it may require is an important challenge.

This does not mean that online tools are better or worse than face-to-face ones, it is a subject that we must deeply analyse in order to achieve the training objectives that we set. On many occasions, combinations of both forms can be developed. For example, allow access to exercises and online content before or after each module or workshop that reinforce learning in face-to-face activities. In the same way, content and material banks can be developed that are shared with those who participate in ways that do not require connectivity, such as the use of USB memory sticks or hard drives.

Ensemble Purlo Difference.





WHAT TASKS WILL THE TRAINERS OF EACH MODULE DEVELOP?

It is important that the committee defines at this stage all the activities that facilitators or workshops should carry out. This helps to share with them what their collaboration implies and is clear about their responsibilities. In other training processes, we often limit ourselves to defining tasks only for them to give the workshop, but, in this type of programme, their participation is intended to motivate them to know the process and get involved in this community.

Among the activities that are defined, there are two to consider: On one hand, the creation of syllabus or descriptive letters is useful to see if the modules or workshops follow the methodologies and objectives proposed in the programme. On the other, the generation of reports at the end of each module or workshop will allow us to evaluate the achievements and areas for improvement to link them with the activities that follow.



WHAT PEDAGOGICAL MATERIALS DO WE NEED FOR THE PROGRAMME?

The pedagogical materials are all those inputs that support the training process and that allow to give greater depth to the topics discussed. There are many types of materials such as videos, audios, infographics, readings, films, manuals, etc. Some can be thought out during the workshops, but we can also support each other before and after each activity.

Although in the acting phase, in each module or part of the programme, the materials to be used in the thinking phase are defined, the advisory committee can define certain guidelines that will guide their use in a general way. For this, it is important to think of some guidelines that will allow the materials to really fulfill their objective of reinforcing the topics and content seen:

- ◆ Most topics have many materials that we can find on the internet or other sources. However, it is necessary to think about whether these inputs are really what we are looking for and whether

they are produced in accordance with the principles, values and ways of sharing knowledge of the communities. Therefore, the importance of all these materials lies in their content and the source from which they are obtained.⁵⁰

In other cases, there are materials that we will have to create in particular for the training process, either because the subject does not have systematised references or because the materials found do not respond to these principles.

✦ The variety of inputs is also something that can help us a lot. For example, we can use videos or audios to explain certain things, but for those who want to delve into a topic, perhaps readings are a good option. People who participate in the programme should have the possibility of accessing different types of resources that complement their learning.

✦ Materials must be relevant to the ways of sharing knowledge of the communities we accompany. For example, if there are poor reading habits, then you should opt for audio-visual or graphic materials.

✦ It is important to think about how these materials will be organised and how participants will be able to access them before and after each part of the programme.

✦ Using sources that are trustworthy, open and related to our values will help make these materials more prudent. Materials produced by us, publications and texts written by people who share our view of the world, videos and images of experiences similar to ours, are a good choice of materials to use.

⁵⁰ For example, if we use a video to visualise what soundproofing materials we can use for the construction of a radio booth, one that shows a radio booth with conditions like ours (weather, environment, dimensions, economy, with materials that are within our reach), and not another that shows a cabin in a context totally alien to ours.



HOW DO WE EVALUATE THE PARTICIPATION OF THOSE WHO ATTEND THE TRAINING PROGRAMME?

The evaluation of those who attend the training programme also considers the selected methodology. The important thing is to be clear about what we want to evaluate and why. There are very rigorous evaluation methods that require participants to perform high in all the activities and tasks carried out. However, we consider that evaluation requires more flexible mechanisms that pay more attention to the process that each participant follows and that is useful to reinforce the areas that are important in their training.

In this way, it is possible to opt for qualitative evaluation methods, where those who facilitate the modules or workshops provide feedback to those who participate, the successes are highlighted and the areas for improvement are indicated. Quantitative methods, where only numerical ratings are assigned, often miss these feedback possibilities. If numerical evaluations are required within the programme, it is recommended that they be accompanied by qualitative feedback to make the evaluation process an integral part of the training.

Another important aspect in the evaluation is to define the mechanisms by which the tasks and reflections of the modules or courses can be delivered. For this, we must remove the idea that only written knowledge is valid; many people express their ideas better in other ways, such as speaking or drawing. We recommend that the evaluation mechanism designed by the advisory committee consider these other forms of expression and thus motivate those who facilitate each module or course to design various evaluation activities.

Finally, participation in training activities is an important element that may be the very logic of the evaluation. In the Techio Comunitario experience, we left out the idea of traditional education where evaluating means measuring those who participate in the training process on a scale to see who did things right or who did things wrong, introducing a logic of competition. On the contrary, we start from the idea that each person has their own ways of processing knowledge and experiences.

So, we focus on evaluating participation based on taking advantage of the opportunity to be in this training programme. For example, in the face-to-face generations, it considered that they participated in at least 80% of the modules and that they delivered their work reports in the field. In the online stage of the training programme that we coordinated with the ITU, handing in assignments at the established times or participating in virtual forums were elements of participation evaluation.

2.4.3 ORGANISATION OF THE ADVISORY COMMITTEE'S ACTIVITIES

Once the advisory committee has defined the guidelines of the methodology to be implemented and the curriculum design of the programme, it is possible to think about the way in which the work will be organised and the responsibilities that its members will acquire before moving on to the action phase.

To do this, based on our experience, we can give two recommendations that we believe are important:

A) ESTABLISHMENT OF COMMITMENTS AND RESPONSIBILITIES OF THOSE WHO MAKE UP THE ADVISORY COMMITTEE

If the programme is built and developed collectively, the responsibilities to which each organisation and person undertakes in the process are defined, taking into consideration their own possibilities and abilities to do so.

We can divide, at least, the tasks to be carried out into two large areas. On one hand, those that have to do with logistical matters and, on the other, the academic activities of each of the parts of the programme. Both can be activities carried out by different organisations, but we suggest that there is a general coordination that can be clear about how the process is being implemented as a whole.

The advisory committee, in addition to making decisions about the programme as a whole, is also the task force for its implementation. Therefore, it is essential to clearly define the responsibilities and tasks that each organisation and person on the committee undertakes to carry out.

One of the most relevant successes of Techio Comunitario was to define in detail all the activities that the execution of the programme required. Likewise, we discovered some tasks along the way and we were able to resolve them based on the commitment acquired from the advisory committee and the roles that each one acquired from the beginning.

Below, we share an organisational structure that allowed us to develop the general programme in Techio Comunitario:

GENERAL COORDINATION

Their main role is to be on the lookout and motivate the entire process to proceed as agreed. Among its responsibilities are:

- ✦ Follow up on the agreements made by the advisory committee.
- ✦ Be a communication link between participants and facilitators or workshops.
- ✦ Attend all the modules for a better accompaniment to the process.
- ✦ Keep control of the general project times so that they are fulfilled based on what has been agreed.
- ✦ Generate the reports of the process with the inputs that are collected in each module.
- ✦ Convene meetings of the advisory committee to monitor and evaluate the process.

ADMINISTRATION

It oversees supporting and monitoring the financial aspects of the programme:

- ✦ Keep a record of the programme's income and expenses.
- ✦ Make payments, both for fees, and for goods and services when required.
- ✦ Make financial and accounting reports for each part of the programme.

MODULE HOSTS

If the programme is face-to-face, for each module or course, it is recommended that there be a person or organisation responsible for ensuring that it is satisfactorily achieved in the logistics field. Each session implies having accommodation, food, transfers, materials and spaces ready to receive the participants. Among its responsibilities are, in addition to implementing all logistics activities:

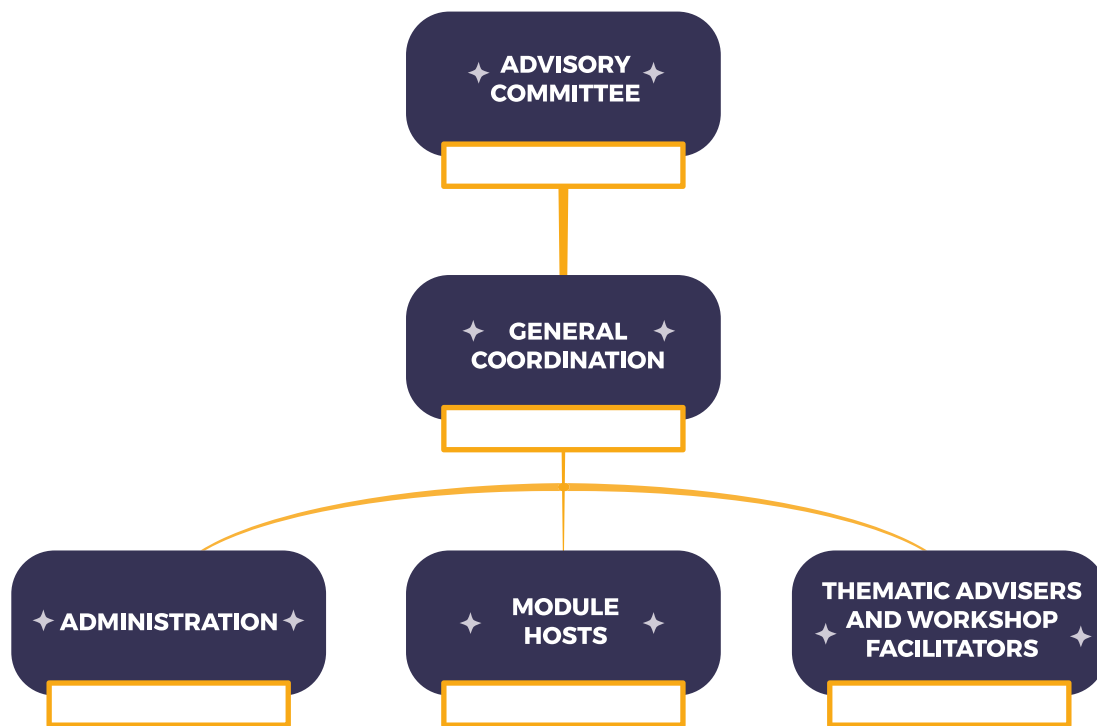
- ✦ Coordinate the work of the workshops so that the descriptive letters of the module are implemented in detail.
- ✦ Keep a record of what is happening in the module or course.
- ✦ Have constant communication with the general coordination for a better execution of the process.

THEMATIC ADVISER AND WORKSHOP FACILITATORS

They are the people who will teach the topics, whether they oversee the entire module or part of the programme, or they participate as speakers in any of the specific content. They are responsible for the following tasks:

- ✦ Prepare the descriptive letter based on the methodological principles of the programme.
- ✦ Coordinate with the module hosts to receive feedback and to have all the necessary tools and materials for the planned activities.
- ✦ Follow up, once the module or workshop is finished, the doubts that arise from the implementation of the topics taught in the modules, so that they form part, together with the advisory committee and the participants, of a community exchange of experiences and knowledge where doubts, concerns and knowledge are constantly shared.

This organisational structure has been transformed to respond to the dynamics of each generation; it is not the same as the one proposed at the beginning of Techio Comunitario. In each programme, a specific design of the organisation that will be carried out is important, considering the specific contexts of each territory. The structure should respond to the needs of the programme and be a form of collective work that reflects the principles defined in each one of them.



B) GENERATION OF PROTOCOLS OR WORK PLANS

In the next stage, that is, the acting phase, the need for constant support, communication and reflection on tasks is important to keep the process and plans in place. To have a framework as a basis for planning that answers the six questions why (goal or purpose), what (objective), how (tasks), who (people), where (place) and when (time), and the necessary resources is immensely helpful, since it can be used as many times as necessary to run everything in the most organised way possible. This is the importance of ending this phase with the creation of protocols or work plans that are generated based on the decisions made by the advisory committee.

Firstly, in the meetings of the advisory committee it is necessary to make reports that allow us to return to the conversations to see if the implementation actions are in accordance with what was proposed by the advisory committee.

Subsequently, based on them, the organisation that coordinates the process may systematise the results to develop a protocol or work plan to carry out the training programme based on the discussions and agreements that have been reached.

This protocol may include the methodological elements and ways of working that will be implemented, as well as the contents, responsibilities, modalities, times, spaces, etc., that will be necessary for carrying out each programme. In other words, a specific guide will be created that allows the execution of the programme based on previously established guidelines.

PROTOCOL

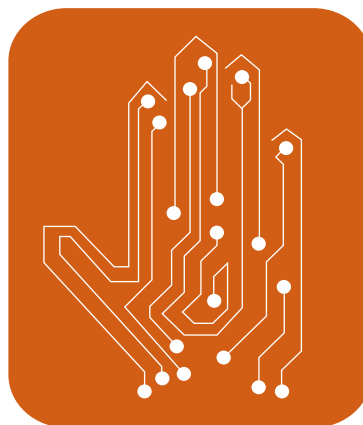
- Principles
- Methodology
- Modular structure
- Contents
- Facilitators
- Times and spaces
- Logistical aspects
- Budget



In the construction of Techio Comunitario, it helped us a lot to capture all the stages that the execution of the programme required and in each one of them think about the activities that involved as much detail as possible, and then distribute the responsibilities among those who participated in its construction. In some stages we all had to work, simultaneously and coordinated. For example, when the selection of participants had to be made, we received more requests than we imagined. And in other stages, only a few had direct responsibilities. Each process will determine the stages necessary for the execution of your programme.

2.5

ACTING PHASE



Now is the time for action, to put into practice all the design that was collectively created for the training programme. Once the methodology is built, it is time to summon. At this point, it is particularly important to have the steps to be taken as detailed as possible, considering the times that are defined together and the responsible person for each step to be taken.

This phase is the most complicated to develop in this guide, as it responds to the characteristics that each training programme has. The diversity of processes that have been woven in the previous phases will give the programme its own personality and the implementation phase will be shaped according to these characteristics. For this reason, we cannot give general proposals of how all the necessary tasks will be carried out in the acting phase of the project.

What we present here are a series of recommendations based on our own experience and that will make sense to the extent that the methodological and curriculum design choices of the programmes are similar to the ones we have implemented:

LAUNCH OF THE CALL AND SELECTION PROCESS

Define the start and end date of the call and ensure that they are met, thus helping the other steps not be delayed.

Assign the people responsible for the different tasks at this stage:

- ✦ Constantly disseminate the call. profile of desired participants that was defined in the advisory committee).
- ✦ Contact person with the participants. For example, to clarify doubts while the call is open. ✦ Define who will participate in the applicant interview process.
- ✦ Collect all the requests, review them and filter them in case more than expected arrive (to carry out the filtering process, we take as a basis the ✦ Conduct interviews and carry out a collective final decision process about who will enter the programme.

PUBLICATION OF RESULTS AND NOTICE TO SELECTED PEOPLE

Once you have defined who will participate, it is important to notify them and start communicating for the next stages. At the same time, we suggest to personally notify those who were not selected and thank them for their interest in this process. Our experience in this regard has shown us that people who are interested in the training programme greatly appreciate this notice, as it allows them to organise their agenda knowing whether or not they will be in the programme.

PREPARATION OF MODULES

In the period in which the call is open, it is recommended to build each of the modules in practice. For this it is important to develop certain activities that will allow a good organisation in each of them. For example, confirm the workshop leaders or facilitators to define the methodological proposal (objectives, face-to-face activities, activities between modules, materials), which will be expressed in descriptive letters or syllabus with the content and methodology to be implemented. In this phase, the venue or venues of all the modules are also confirmed.

START OF MODULAR MEETINGS

This stage is the implementation or execution of the programme. On one hand, work is done on the logistical aspects (accommodation, food, transfer, characteristics of the space to determine needs that must be worked on). Likewise, it initiates an important process of constant communication with the participants before the first module and between modules to ensure their continuity in the programme and solve problems or doubts that arise.

On the other hand, it is essential to register each module (list of attendees, take photos, record the moments in video, as well as summarise the entire process for future review). We suggest having the reports, photos, videos and pedagogical material used in the first module, before starting the next module and so on. For this, we recommend that there be at least one person in charge of this task throughout the programme, in order to have sufficient inputs to systematise the process.



IMPLEMENTATION BETWEEN MODULES

In each module, in coordination with those who facilitate them, it is important to determine what activities will be entrusted to the participants as tasks, which serve as implementation of what they have learned in each module and share doubts and experiences in the next face-to-face module.

In these activities, support and communication with the participants by the facilitators and general coordination should be sought, as well as seeking communication between the group of participants to encourage the exchange of knowledge throughout the process. It is possible, for example, to create groups in instant messaging applications where they can share doubts, experiences or things that are important to them.

PARTIAL REFLECTION OF THE PROCESS

Halfway through the programme collect the experience of those who participated, as part of the systematisation of the process, and this will serve as a reference to determine if there are things to change in the second part of the programme. In the same way, this moment serves to check if all the registration material has been gathered (attendance lists, photos, videos, reports, pedagogical materials) for the final systematisation.

CLOSING REFLECTION OF THE PROCESS

When the methodology of the last module is built, it is recommended to assign times to carry out a closing of the process with the participants, and to have their opinions and feelings during the programme. Making a guide of what you want to evaluate can be useful to work on in a group or in subgroups. Doing individual interviews is also a good resource to evaluate. Hold a final meeting of the advisory committee to evaluate the process at the execution level and finalise the systematisation of the process.

Just as it is necessary to carry out the evaluation at that time, we also believe that it is important to celebrate what has been achieved in that time, the experiences lived, the learning, the achievements and the friendships and ties created. This moment of celebration, by way of graduation, is very enriching and allows for a reflective and festive closing, that provides the impetus for each person to continue with the projects in their communities, now accompanied by a support network that will allow them to continue weaving the paths towards technological autonomy.



2.6

EVALUATING PHASE



On many occasions we think of evaluating our actions only as a necessary input to respond to the commitments we have, for example, with our funders. The time we spend thinking about our projects together with those who have been part of them, and the topics that we are going to evaluate respond more to that external logic on the topics and evaluation strategies, than to a conscious process of what we want to achieve with it.

However, evaluation is an indispensable element and requires that we give it the time, resources and space to carry it out in the best way possible. We can think more about its importance as a systematisation process that allows us to reflect on our own practice and that leads us to generate actions to improve it, but also to think about new horizons towards which to walk.

The phase of evaluating the results and systematising the experience is a process that will be constantly under construction throughout the journey of each training programme. It is important to develop mechanisms in the different stages of the project, so participants, members of the advisory committee and workshop leaders can express their opinions on the successes and areas for improvement. With these inputs, we can make the necessary adjustments for later stages and improve the training experience in new editions of the programme.

In other words, as the experience and knowledge sharing community works through the seeing, thinking and acting phases, there is the need for a constant evaluation process to monitor activities and progress. The evaluation should provide indications of the extent to which the process has transformed the lives of the people with whom the project was formulated and implemented, and should be clearly focused to achieve the desired purpose.

Based on our experience, there are three major areas or aspects that are important to consider in the evaluation of training programmes:



✓ DESIGN AND IMPLEMENTATION OF THE PROGRAMME

In this evaluation area, we will reflect on the construction of the programme, the challenges we face on the way to weave all the elements that compose it; that is, the whole journey that we have decided to undertake, from the scenario construction phase to the end of the process.

We can summon people who participated directly in the design and implementation process of the programme, such as the members of the advisory committee or the workshop leaders.

The reports of the meetings and the protocols that we have designed in the first phases will be an especially important input for this reflection, because in them, we will be able to find the reference of the dreams that we had when building the programme and the way in which things happened in reality.

It is suggested that the analysis of this evaluation is carried out at the end of each edition of the programme and that another reflection exercise takes place about the design and methodology of the programme a few months after it has been closed. This will allow us to have two types of opinions about what has been done. On one hand, by doing it immediately we can have more vivid memories of what happened; on the other, by allowing time to pass since we ended, we can obtain information regarding the things that happened after the training programme and that help us to see if those dreams we had were developed.

Regarding the techniques that we can use, our proposal is qualitative techniques, seeking that they encourage discussion about the elements to be considered. For example, it would be feasible that, in addition to an evaluation in the final module or workshop of the programme, we could hold a meeting with the members of the advisory committee a few months later and analyse what has happened and

the improvements that are suggested to be made. In case resources or times are difficult, we can also do semi-structured in-depth interviews that allow us to express the results of this evaluation in a reflective report.

✓ CONTENTS AND METHODOLOGIES IMPLEMENTED IN EACH MODULE OR COURSE

This area of the evaluation is based on seeking the needs for improvement in the pedagogical objectives of the training programme, analysing the methodologies and contents of each of the modules or courses, the issues that were not addressed, or in which it is required to deepen more, the experience in the teaching of the facilitators, the support materials, the tasks and practical activities, etc.

The intention is that these inputs allow us to develop in the following editions, a renewed programme with the results provided by the evaluation, considering the elaboration of our own materials and/or the choice of those that are suitable for us; as well as the choice of a general curricular structure and per module, that is increasingly adjusted to the ways of learning and sharing knowledge that exist in the communities.

In this area, it is important that the programme participants are the ones who share the information with us. You can include not only people who have managed to give continuity to the entire programme, but also those who have had to drop out. Likewise, it is appropriate for people with different profiles to participate in order to know the learning challenges they faced, due to the knowledge and experiences they previously had.

To achieve the expected results of the evaluation of the contents and the methodologies implemented, it is suggested that this process be carried out in different phases of the programme. First, at the end of each module or course, carry out an evaluation exercise from which more detailed information is obtained on what happened in each case. Second, a mid-term evaluation and at the end of the programme that allow us to observe the areas of improvement and successes in a structural way; that is, having an overview of all the topics seen and how they relate to each other.

The evaluation techniques that can be useful to meet the objectives of this area can be very varied. It is advisable to mix quantitative methods, such as written questionnaires, where the participants express their opinions and allow us to have a statistical diagnosis about the modules in general. And, on the other hand, qualitative methods, such as interviews or focus groups, where it is possible to delve more deeply into the reasons for the opinions given by the participants.

Likewise, there are different participatory techniques that can help us, such as the creation of a collective evaluation matrix made up of the comments that the participants express through papers that are grouped by categories, or interviews that are carried out among the participants themselves.

✓ RESONANCE OF THE EXPERIENCES LIVED

In this area we will focus on discovering what has happened to the people who have graduated from the training programmes to see what type of projects they have developed, the way in which existing ones have improved, the way in which knowledge of the programme has been applied in their projects, the socialisation of the knowledge acquired, the way in which they have related with other graduates and, in general, how they consider that the project changed or not their daily lives and what impact this has had on their communities.

In general, the results of this area will allow us to observe if the dreams that we raised at the beginning of the programme have really been appropriate and shared by the participants. It will help us to understand what skills, knowledge and experiences are the ones that really transformed and reinforced their work. Likewise, we will be able to know the dynamics that have been woven from the training programme among the participants and facilitators and actions that strengthen the network that we have been forming can be reinforced.

As the resonances that the programme has had in the life, the projects and the communities of the participants will be generated over time, this type of evaluation cannot be done immediately; it is rather suggested to allow a few months to pass while the actions they decide to take are being carried out.

Allowing time to pass will also help to have a more critical view of the programme and prevent opinions about its significance from being influenced by the emotion that is generated, especially at the end of the training.

The techniques that we suggest being used are once again qualitative as they allow us to see the reasons for the answers given by the participants, and open spaces for the account of experiences they have had. We can use in-depth interviews or visits to the projects in which the participants collaborate, but we could also think about evaluating these resonances to reinforce the ties in the network that we have formed. For example, if we saw that an important topic was needed in the programme, we could do a new workshop with graduates on this and have a space for reflection and evaluation right there.





Carrying out each of these evaluation actions will allow us to systematise the experience, keep a living memory of what we have achieved and the challenges we must face. This systematisation, in addition to being a reflection on our practices and generating new horizons towards which to walk, also gives us the opportunity to socialise what we have learned so that other people, organisations and communities can develop their own training programmes.

Likewise, the evaluation allows us to generate materials to disseminate the experience that can be shared to summon more people to participate in the programme, seek funds or make us feel again what moved us. Therefore, a recommendation is to generate videos, radio programmes, texts, image galleries or any other communication material that portrays what we have experienced.

The creation of a new training cycle is based on the results obtained in this phase. The inputs and ideas that arise from the reflections that are generated will allow us to understand the elements that we must consider for the creation of new editions of the programme. This will require a time to redesign and adapt the structure, content and methodologies implemented before starting a new process. The advisory committee can raise again the initial questions by adding the lessons learned from the programme and new people can be involved in the programme. The beginning of a new cycle will take us again to go through the phases of seeing, thinking and acting.

Finally, let us not forget to celebrate the achievements and experience of the programme. No matter how many challenges and difficulties we have had, the very realisation of the programme and the exchange of knowledge and experiences are a success. This space of enjoyment will give us new energy to continue building the paths towards technological autonomy in our territories.



ANNEXES

ANNEX 1: EXAMPLES OF TRAINING EXPERIENCES AROUND THE WORLD



Organisation:	AfChix	Country or region:	Africa
Kind of training:			
Face-to-face workshops for girls and women to strengthen technical capacities with a gender perspective.			
Programme description:			
<p>AfChix is a network of women in technology who consider gender diversity in the computer science and ICT industry critical for increasing creativity and innovative performance of the industry. The network is based in Kenya but has activities impacting over 25 African countries.</p> <p>AfChix developed a project called Gender-Sensitive Approach to Connect the Unconnected Using Community Network Models, to support the implementation of community networking projects with a gender perspective in four countries: Senegal, Kenya, Morocco and Namibia.</p> <p>The network is also involved in mentoring girls to consider careers in computer science and IT. They achieve this through school visits, celebrating Annual Girls in ICT Days, running technical workshops such as the AFNOGChix Linux Administration Series, and sponsoring their members' participation in technology conferences like the Grace Hopper Conference for Women in Computing (GHC), and Africa Internet Summit (AIS).</p>			
Objectives:			
+ Expose girls and young women in more than 25 countries in Africa to possible career opportunities in computer science and ICT, empowering them to join technical fields with confidence.			
Participants:			
Upper elementary and high school girls between the age of 9 to 18. Also, young women who have recently joined ICT/ computer science careers at universities and workplaces, and those seeking to grow into technical leadership positions..			
Methodology:			
AfChix encourages the exchange of ideas and knowledge between young people and women entrepreneurs, inspiring a collaborative approach to growth. Through its dynamic platform, it seeks to encourage, support, guide and share among the participants for the progress of their professional careers. Also, it is based on a gender approach.			
Content:			
How to establish and maintain community-based and owned telecommunications infrastructure.			
More information:			
http://www.afchix.org/			

**Organisation:**

Centre for Information Technology and Development (CITAD)

Country or region:

Nigeria

Kind of training:

Mentoring programme and technical training in rural contexts, particularly in technological issues related to entrepreneurship.

Programme description:

The Centre for Information Technology and Development (CITAD) is a non-governmental and non-profit organisation that is committed to the use of information and communication technologies (ICT) for the development and promotion of good governance. They focus their effort on ICT to empower youth and women through access to information, skills development and online mentoring opportunities.

The areas of work include:

- + Technology applications in governance and elections
- + Youth development and entrepreneurship
- + Peace building efforts, including monitoring of hate speech, transparency and the fight against corruption
- + Business development and promotion of ICT.

The type of training they develop is directly applied into the field, addressing the main themes in their objectives and with an emphasis on technological knowledge. The training is delivered in the mother tongue of the participants.

Objectives:

- + Understand and know how to use technological tools, such as computers, internet or applications, and how these tools relate to entrepreneurship.

Participants:

Inhabitants of rural areas of Nigeria, especially for girls and women living in these communities.

Methodology:

Its methodology is based on directly experiencing, learning and teaching together on the development of specific skills. Once the training is finished, the participants and the contents released are evaluated. After six months, the people who completed the training programme are contacted to know what they are doing and which knowledge and skills they are putting into practice. A lot of follow-ups are given to those who have participated, in addition to the possibility of undertaking their own projects and looking at how to obtain capital or support from the organisation.

Content:

- + Technological skills
- + Technological inclusion
- + Entrepreneurship.

More information:

<https://www.citad.org/>



Organisation:	Common Room Networks Foundation	Country or region:	Indonesia
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Kind of training:

Training programme for technical people to install and operate community networks.

Programme description:

Common Room is an open platform for creativity and innovation. Since 2006, the organisation is committed to freedom of expression and civic empowerment through the arts, culture, ICT and the media. Starting in 2013, Common Room has also been actively engaged in a collaborative effort with the Indigenous Kasepuhan Cipatagelar community to develop urban and rural collaborative platforms that foster creativity, innovation and social entrepreneurship in local and international contexts.

Before establishing the infrastructure of the community network, a programme of training activities is started where the technical skills necessary to develop a project of this nature are shared. It is not especially structured technical training, but it is very practical and it takes place over a period of approximately two months.

Starting in 2020, the Rural ICT Camp is a collaborative effort to support the consolidation of ideas, practices and initiatives on the development of community-based internet infrastructure. For four days, the camp includes online and face-to-face seminars and discussions, knowledge sharing, workshops and exhibitions related to joint efforts to build a local community-based internet infrastructure in rural and remote areas of Indonesia.

Objectives:

- ✦ Train local technicians with the knowledge and skills necessary for implementation and maintenance of the local community networks.

Participants:

People from the communities that operate, maintain, and manage the networks.

Methodology:

It is a mix between theory and practice. Most of the participants do not have previous technical education, so everything is done in field work, sharing the concepts in a simple, practical and concrete way. People who are trained become technicians. In addition, a more structured training programme is being prepared, in conjunction with other organisations, to integrate the necessary content to continue training more technicians who can participate and work for the community network.

In the Rural ICT Camp different training techniques are combined, such as workshops, round tables and conferences. The activities are carried out in person, but also online transmissions are developed so people from other communities can have access to the training.

Content:

- ✦ How to build a tower
- ✦ How to install a router
- ✦ How to install a switchboard
- ✦ How to connect fibre optic cables
- ✦ How to install a modem
- ✦ How to install wireless devices
- ✦ Administration and sustainability
- ✦ How to get resources.

More information:

<https://commonroom.info/>

**Organisation:**

Coolab

Country or region:

Brazil

Kind of training:

Face-to-face training camps related to community networks and the exchange of experiences.

Programme description:

Coolab is a cooperative laboratory in Brazil with proven experience since 2017, in creating autonomous telecommunication infrastructures with communities who have poor or no connectivity at all, through technical training and community activation. Their work is based on the idea that infrastructure alone is not enough, to have autonomy it is necessary to appropriate knowledge and the will to make it happen, and that knowledge only exists if it is shared.

In order to follow that objective, they have developed a training programme called CoolabCamp, that is considered a space where people who deal with community networks can share their experiences and "recipes" on maintaining and creating networks. Two editions were delivered in 2018 and 2019, during an immersion weekend in Monteiro Lobato, Sao Paulo, Brazil, in association with the organisation Portal sem Porteiras and as part of a Community Networks Learning Grant Project by APC.

Objectives:

+ To spread the culture of community networks and train more people for the facilities, especially members of groups with little insertion in IT, such as women, Black people, Indigenous people and many others.

Participants:

Mostly marginalised groups like quilombolas, Indigenous people and women.

Methodology:

They employed Coding Dojo methodology, which tries to divide the task into micro steps that will be carried out by the "pilot" and "co-pilot", rotating positions through which all participants will pass. Also, the way to choose the themes or the activities during the immersion programme are decided by everyone.

Content:

Tech and non-tech knowledge related with community networks technology (free hardware and software; long distance link configuration; free spectrum; installing firmware on routers; LibreMesh, methodologies; techno culture and digital rights; community radio and television).

More information:

<https://www.coolab.org/>



Organisation:	Detroit Community Technology Project	Country or region:	United States
Kind of training:			
Training of community technicians in Detroit neighbourhoods, through direct training and the creation of pedagogical materials.			
Programme description:			
<p>The mission of the Detroit Community Technology Project (DCTP) is to use and create technology rooted in the needs of the community, which strengthens the connection of neighbours with each other and with the planet. Within the Equitable Internet and Wireless Community Initiative programme, community technology is viewed as a teaching and learning method to restore relationships and heal social infrastructure. Community technologists are those who have a desire to build, design and facilitate the healthy integration of technology into people's lives and communities, enabling them the fundamental human right to communicate.</p> <p>The idea is to train "digital delegates" who live in the Detroit neighbourhoods. Each delegate completes a 20-week training programme. The Initiative supports and trains historically underserved residents to build and maintain a neighbourhood-governed internet infrastructure that fosters accessibility, consent, safety and resilience.</p>			
Objectives:			
<ul style="list-style-type: none">+ Increase internet access in underserved neighbourhoods+ Increase adoption of the internet through digital literacy programmes+ Train and develop residents as digital managers+ Strengthen neighbourhoods through community organisation, participation, collaboration, and resilience.			
Participants:			
Residents of Detroit neighbourhoods, who are considered as community organisers, media creators, educators, artists, and neighbourhood leaders.			
Methodology:			
The methodologies they use are based on participatory and practical pedagogies in the training process and the development of networks. Likewise, the initiative has been in charge of developing guides and kits that allow the knowledge learned to be replicated and put into practice. For example, the Neighborhood Network Building Kit. The modules are designed to be used by individuals or groups for self-guided learning or to deliver workshops.			
Content:			
<ul style="list-style-type: none">+ Learn how to install and manage wireless (mesh) community networks in the neighbourhoods.+ Community organisation and wireless engineering.			
More information:			
https://communitytechnology.github.io/docs/cck/index.html			

**Organisation:**

Digital NWT

Country or region:

Canada

Kind of training:

Training of trainers for the implementation of technology projects in remote areas of northwestern Canada.

Programme description:

Digital NWT aims to strengthen the foundation of community-based digital literacy in the Northwest Territories (NWT) of Canada. With a train-the-trainer approach, Digital NWT equips a team of "adult educators" of the communities (the people who train adults to learn how to read for example) with the skills to deliver digital literacy training in communities throughout the NWT. Participants learn how to use digital devices, browse the internet, manage data, and stay safe online. Upon completion of the project, local communities will have a personalised digital literacy curriculum package that can be continuously taught and updated.

Objectives:

✦ Train the "adult educators" of the communities so that they can teach digital literacy to the members of the communities.

Participants:

People from the communities that support the learning of adults and youth.

Methodology:

The adult educators participate in a workshop, and then they work improving and incorporating the content they consider appropriate to teach the 12-hour workshop in their communities, so the course curriculum is fully adapted to the needs of the communities. The project lasts four years.

Content:

- ✦ Basic digital knowledge
- ✦ Content and protection of use
- ✦ Introduction to the internet and how to form a community network
- ✦ Digital storytelling.

More information:

<https://sites.google.com/uAlberta.ca/digitalnwt/>



Fundación
EsLaRed

Organisation:

Fundación Escuela Latinoamericana de Redes

Country or region:

Venezuela

Kind of training:

Annual face-to-face workshops that take place in different Latin American countries, for one week.

Programme description:

Fundación Escuela Latinoamericana de Redes (Fundación EsLaRed) is a non-profit institution dedicated to promote information technologies in Latin America and the Caribbean, based in Venezuela. Since 1992, the Foundation has organised the Workshop for Latin America and the Caribbean (WALC).

The WALC is held annually for one week. The courses delivered are related to different technical specialisations in telecommunications. Several years ago, the development of community networks was added.

Until 2019 the workshops were held in face-to-face modality, in different countries of the region. In 2020 the modality had to be changed to online courses due to the COVID-19 pandemic.

Objectives:

+ Contribute to meeting the training needs of technicians and professionals in the area of information and communication technologies, with an emphasis on the practical aspect of networks, on the organisation and management of ICT projects and on recent technological developments in these fields.

Participants:

Students, professionals and telecommunications technicians from Latin America.

Methodology:

Six workshops are offered simultaneously. Attendees choose the one that best suits their needs and professional requirements. Each of them is taught and designed by specialists in the topics, and their design responds to the expectations of training and evaluations of previous editions.

Some of the methodologies that are implemented include the explanation of theoretical concepts through projected transparencies, guided practices on PCs and remote connection to laboratories with routers, as well as the realisation of practices on virtualised systems.

Content:

In 2020 the following workshops were offered:

- + Hands on IPv6: routing and services
- + Network management and monitoring
- + Information security
- + Internet of Things (IoT)
- + Community networks
- + Cloud computing and big data.

More information:

https://eslared.net/linea_walc

guifi.net



asociación
cultural
la kalle



Organisation:

Guifi.Net, Asociación Cultural La Kalle and REAS Madrid

Country or region:

Spain

Kind of training:

Modular face-to-face training of 10 sessions of four hours each module.

Programme description:

Guifi.net from the Social Economy: Training Workshop for Suppliers and Installers is a programme focused on the relationship between the social economy and community networks. This programme was carried out in face-to-face sessions during a month.

One of the specific objectives of the course is to link the participants in the activities that the MadGuifi association carries out in order to continue learning. At the end of the course, the people who participate have access to specialised mentoring for support and advice on the start-up of work cooperatives. Likewise, access to supporting materials and documents is provided through the Moodle platform.

Objectives:

✦ Promote the entrepreneurial culture and the employability of the participants, through practical training in the installation of common telecommunications networks based on social economy.

Participants:

Mainly young people who consider self-employment as an alternative, considering the precariousness of the labour market in Spain.

Methodology:

The methodological model is committed to active learning. Participants have the possibility of being involved in their own learning, generating an open space for interaction with teachers and with the content. The practical aspect is considered as a primary factor: they work on examples and applied exercises that help them to understand the knowledge and the process of creating a real cooperative. Thus, the learning process tries to move away from the traditional memory and passive model in front of the teacher's expositions, to give way to an active, reflective, practical, group and experiential method.

Content:

- ✦ Introduction: You learn to undertake
- ✦ From the business idea to the business plan
- ✦ Economic feasibility of the project
- ✦ Common network infrastructure
- ✦ Economic ecosystem
- ✦ IX, PoP and wholesale internet
- ✦ Human team management and care
- ✦ Radio-link, hybrid and fibre optic networks
- ✦ From the perspective of the service provider
- ✦ Volunteering.

More information:

<https://hackmd.io/QUwxZqk7Txm74pz09NPtoQ>



OEA | CITEL

Organisation:

Internet Society and Inter-American Telecommunications Commission (CITEL)

Country or region:

Latin America

Kind of training:

Online training course for six weeks focused on the deployment of wireless networks.

Programme description:

Building Community Wireless Networks is a training course about wireless technology and Wi-Fi equipment, which uses the unlicensed 2.4 GHz and 5.8 GHz spectrum bands, to create community-owned and operated wireless networks, allowing them not only to run and manage these networks but also to transfer knowledge.

The course is conducted online through the Moodle platform, for six weeks with a weekly load of eight hours. It is taught in the Spanish and English languages. In the last edition, 150 scholarships were offered covering 100% of the cost of tuition (100 scholarships for Spanish-speaking participants and 50 scholarships for English-speaking participants).

Objectives:

- + Acquire knowledge and basic concepts of creating wireless community networks
- + Learn about experiences on how to design wireless community networks
- + Acquire the knowledge necessary to design a wireless community network implementation plan
- + Transfer knowledge about wireless community networks to others in the community.

Participants:

People from Latin America and the Caribbean interested in creating or consolidating knowledge about community networks. Organization of American States (OAS) member states, associate members of CITEL, telecommunications and/or ICT ministries and secretaries of the OAS member states, regulatory entities of the telecommunications/ICT sector of the OAS member states, regional, professional and technical organisations in telecommunications/ICT, civil society and interested communities.

Methodology:

The virtual course is divided into modules, and specific topics are developed by the specialists. At the end of the presentations, the participants respond to questionnaires that are evaluated directly on the platform.

There is also a forum where participants can ask questions or interact with facilitators and/or colleagues.

Content:

- + Standards for IEEE wireless networks
- + Radiophysics
- + Practical planning for the implementation of a wireless network
- + Introduction to networks
- + Routing
- + Infrastructure and network topology
- + Configuration of radiofrequency devices
- + How to make a wireless network secure
- + Troubleshooting a wireless network.

More information:

https://www.citel.oas.org/en/SiteAssets/About-Citel/Scholarships/2020/ci-056-2020-Convocatoria-Curso-Redes_Comunitarias-ISOC-CITEL_e.pdf



Organisation:	Tunapanda Institute	Country or region:	Kenya
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Kind of training:

On-site training programme that includes a mentoring process and the possibility of accessing a training of trainers programme.

Programme description:

Tunapanda Institute is a non-profit social enterprise that operates in regions of East Africa, such as Kibera (an informal settlement in Nairobi). Its goal is for schools and youth centres to access digital educational content and technical support for institutions, affordable internet access and digital literacy training for schools, women and young people in the community.

Among all the activities they carry out, the TunapandaNET programme focuses on building a community network in Kibera that allows access to educational resources.

As part of these training strategies, they develop a three-month intensive full-time training programme in technology, design and business, in extremely low-income environments in East Africa. This programme has been carried out in other communities in Kenya, Tanzania and Uganda. The training is face-to-face because most of the people who participate in it do not have access to the internet.

Objectives:

✦ Empower youth in practical technology, design, and business skills to acquire the knowledge and skills to succeed in a digital world.

Participants:

Young people between the ages of 18 and 35 from economically and socially marginalised areas in Kenya and other African countries. They have an interest in ICT and wish to develop themselves in these fields.

Methodology:

The training is face-to-face because most of the people who participate in it do not have access to the internet. They are also based on a “peer to peer” teaching-learning methodology, which means teaching and learning from each other every day. The training programmes follow the methodology of training trainers who can replicate the knowledge and experiences acquired.

At the end of the programme, participants can choose an area of interest. They can get mentoring that supports the continuity process in the next activities:

- ✦ Searching for a job
- ✦ Entrepreneurship and business incubation
- ✦ Keep studying
- ✦ Participate in a ToT programme
- ✦ Plan for monitoring technical specialisation within training centres.

Content:

- ✦ Technology (app development, networking)
- ✦ Design (Photoshop, Gimp, design thinking)
- ✦ Business skills (how to turn your idea into a business).

More information:

<https://tunapanda.org/>



Organisation:	NYC Mesh	Country or region:	United States
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Kind of training:

Face-to-face training focused on generating installation leaders through practical learning.

Programme description:

NYC Mesh is a community network that offers fast and affordable internet access to New York residents, and it works through the participation of volunteers in the installation and administration of the nodes. City residents are responsible for maintaining and growing the network.

Through the training processes that they promote at the time of node installation, they educate and empower the community to grow in their knowledge and understanding, independently, without the need for specific mentors or teachers.

They also have a digital training platform where volunteers and installation leaders can access materials that reinforce their knowledge. The website is maintained by volunteers, so that the entire community adds missing information, and it is the basis for answering specific questions that are had.

Objectives:

+ Train the community that is part of NYC Mesh on technical and computer skills necessary to install the network and keep it running.

Participants:

The focus of the programme is training new digital managers or installation leaders who have the technical skills to serve their community.

Methodology:

NYC Mesh hosts regular group training sessions to acclimate new volunteers to the basics of networking, NYC Mesh systems and other topics that can be covered during a class. In these classroom trainings, they work with new volunteers to “build your own internet” by creating a simulated mesh network.

Before becoming a facility leader, volunteers register as apprentices at three to five facilities where they can gain practical experience and comfort with the process. These training sessions are approached by individual facility leaders in different ways, some are highly organised (for example, they send out a survey in advance about the skills a trainee would like to work on), while others are developed directly in practice. After completing the programme, the volunteer becomes a facility leader and is given the necessary tools to continue their work.

Content:

- + Basic principles of networks and mesh networks
- + More advanced networking materials (eg. OmniTIK, LiteBeam)
- + Ways to train new facility leaders
- + Additional installation information, such as a label guide, safety guide, materials, etc.

More information:

<https://www.nycmesh.net/>

**Organisation:**

Portal sem Porteiras

Country or region:

Brazil

Kind of training:

Face-to-face reflection circles on technology, directed for and by women.

Programme description:

Portal sem Porteiras is a community network in the Souza neighbourhood of Monteiro Lobato, in the southeast of Brazil. The organisation aims to work on communication in its different aspects. In addition to implementing a community internet network, it also works to sensitise the community about the safe use of technologies and promote participation in the construction of autonomous technology.

They develop the feminist project on the web Nodes that Bond. It works to deepen knowledge in technology and communications, and to close the gap between rural women and communication tools, through a feminist communication and technology project that consists of monthly meetings between women. Located in a rural area with its own traditions, they focus on discussing the internet and how it affects the way people interact with each other.

From this collective understanding, a content creation movement for the local network emerged, conceived and carried out by women from the community. The initial project was a map of women built on a feminist vision. Women interviewing other women (former neighbourhood residents) and turning these interviews into responsive and inventive web pages. The pages were finally mapped onto the local network. Thus, the community of women presents its own wealth and history autonomously.

Objectives:

✦ To understand the infrastructure and operation of the internet for more women to be capable of technically managing a network and be aware of the paths taken by the information they generate and receive, rethinking the passivity with which ICTs are used.

Participants:

Women of the neighbourhood interested in training in feminism and technology issues.

Methodology:

The Nodes that Bond methodology is based on women's circles that take place once a month for seven months. In these meetings, a tutor shares with local women different topics related to global and local communication.

Content:

- ✦ The internet and its female protagonists
- ✦ Mobile phones and data capitalism
- ✦ Google, where are my socks?
- ✦ Digital artisan
- ✦ Websites and different artistic digital initiatives in the world
- ✦ Body and technology
- ✦ Protection and security.

More information:

<https://www.apc.org/en/news/nodes-bond-meet-women-building-community-networks-rural-brazil>



Organisation:	The National Mission on Education through Information and Communication Technology (ICT) of India's Government	Country or region:	India
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Kind of training:
Online platform that allows access to content in audio and video.

Programme description:
Spoken Tutorial is an educational content web where people can learn to use open-source programmes. Audio and video tutorials are used to deliver the training programmes. In some cases, they train people directly with the help of the tutorials, while in other cases they follow the training of trainers (ToT) model. The tutorials are downloaded to be available on a server. This lets people use these tutorials offline on the day of the training. It also provides certificates to participants when they have completed their training. For healthcare workers, each must follow at least six children for six months and their progress is monitored monthly.

Objectives:
+ Develop technological, health and nutrition capacities, as well as the development of skills that reinforce the knowledge learned in school.

Participants:
Especially students, teachers, and health workers. However, online courses are available to anyone who is interested in learning.

Methodology:
Classes are held through online tutorials. Teachers in schools can also use the platform to prepare lesson plans, explain abstract concepts and assign digital tasks to students, but the methodology used is different for each type of training. The methodologies are similar for the development programme for teachers, students, etc. It is different for health workers where a ToT model is largely followed, as it is intended that the spoken mentoring is filtered into the community.

Content:
Engineering, pure sciences, and other undergraduate and graduate studies. It also can be extended to business, arts, and management topics. Alongside these subjects, there are also some relevant school-level courses, which help students visualise maths and science concepts.

More information:
<https://spoken-tutorial.org>

**Organisation:**

Zenzeleni Networks NPC

Country or region:

South Africa

Kind of training:

Mentor training programme for members of the communities where the networks will be developed.

Programme description:

Zenzeleni Networks NPC is an organisation that supports the deployment and consolidation of community networks in rural areas of South Africa. Participants have ownership of their telecommunications businesses, allowing them to maximise value and benefits.

Through a mentor training programme, the organisation acts as a catalyst for the development of skills and knowledge, focusing on communities claiming the use and value of the internet in their rural contexts.

Although this programme does not follow any formal structure, the dedication to work and learning is significant. It is also important that the knowledge imparted with this mentoring programme can be easily shared with others, keeping in mind that continuous learning can be used as a tool in the future.

Objectives:

- + Help communities to create new cooperatives, guiding and training them to design and register their business operations, services, and networks.
- + Ensure that existing cooperatives know how to manage the common network, its operations and community initiatives.

Participants:

People from the communities where the development of community networks is proposed.

Methodology:

The training is carried out through a mentor training programme, which will later replicate the acquired knowledge into the communities. Learning is experiential, for example visiting other community networks. Additionally, the programme includes one-to-one meetings with experts, mentoring and group calls.

Content:

Technical, financial, and sectoral knowledge of each community.

More information:

<https://zenzeleni.net/>

ANNEX 2: TECHIO COMUNITARIO'S MODULAR STRUCTURE

During its two generations, Techio Comunitario in Mexico was made up of face-to-face modules monthly. To define this structure, we think about the daily life of the people who participated, such as how much time would be okay for people to be absent from their family or community? How much time would we need to address the contents proposed in the methodology? How much time would the participants need for the topics to be internalised and put into practice back in their territories? Or how much would each module cost?

Each module was constructed in such a way that there was time allotted for theory and practice. In some cases, general practice was done between the whole group and in other cases the participants did practical exercises throughout the session. The aim was gaining security on the application of knowledge and on the use of tools or technologies for the subsequent application of what has been learned directly in their communities.

At the beginning of the programme, there was a curricular structure designed, based on the research results and the discussions of the advisory committee. As we progressed in the process, we realised some improvements had to be made, particularly on some contents and topics to be included, as well as on the general structure of the programme.

The general structure of the first generation was formed by a common part and three specialisations, as follows:

Common part	Specialisations	Integration module
1. Community communication and technologies 2. Electricity 3. Electronics 4. Free software and security.	5. Broadcasting 6. Wireless networks 7. Community cellular telephony.	8. Legal framework and sustainability.

Almost all the participants decided to take all the specialisations classes and they pointed out that the biggest challenge had been to attend all the sessions. For this reason, at the end of this first edition, we realised that the number of modules had to be reduced, the number of days increased, and the topics grouped in such a way that the technical and the organisational or social subjects were addressed in the same session. As a result, during the second generation, the structure was changed as follows:

Module 1:	Module 2:	Module 3:	Module 4:	Module 5:	Module 6:
Community communication and technologies + free software	Electricity and electronics	Broadcasting	Community internet networks	Community cellular telephony and solar energy	Legal framework and sustainability

When we started to work on the design of the international programme, in collaboration with ITU, we faced new challenges and an opportunity to redesign it based on the knowledge acquired. Also, we had to consider that many parts of the programme would have to be done online. The structure of this new programme was implemented as follows:

Online	Face-to-face
<ol style="list-style-type: none"> 1. Community communication and technologies 2. Basic electricity and electronics 3. Radio frequency and computer networks 4. Regulatory environment 5. Sustainability. 	<ol style="list-style-type: none"> 1. Social common part: <ul style="list-style-type: none"> • Knowledge of the territory where the camp was held • Communication horizons • Review of regulatory framework and sustainability • Rally hacker. 2. Technical common part: <ul style="list-style-type: none"> • Solar energy and review of electrical installations • Grounding and tower climbing • Review of topics on radiofrequency. 3. Specialisations <ul style="list-style-type: none"> • Broadcasting • Community networks and intranets • Community cellular telephony.

The online courses lasted between four and six weeks each, from May to December 2019 through Moodle on the ITU Academy⁵¹ platform. The objective was to develop the transmission of technical and conceptual knowledge that was the basis for the practical experiences that were developed on the face-to-face stage.

The face-to-face training camp took place in the territory of the Union de Cooperativas Tosepan Titataniske,⁵² in Cuetzalan del Progreso, Puebla, Mexico, for 10 days. In addition to the participants who finished the online programme, people from the community were invited to participate and different speakers were invited to talk about the contents of the course. This stage became a great party in which practices of the issues studied in a real context were carried out and as part of the integral project of technological autonomy that the Union of Cooperatives has been developing for several years.

At the time of preparing this guide, we were in a new review process of the programme derived from the opening of the second generation. We carried out a systematisation of the experiences lived since we began to think about this dream and, based on this, the blended programme was redesigned.

Through practice and constant reflection, we have been adapting the programme and we believe that this path of rethinking the process will continue to be a fundamental element of the success it may have in the future.

⁵¹ <https://academycourses.itu.int/>

⁵² <https://www.tosepan.com/>

