

“Practice-based learning” to create resilient communities in Nicaragua



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The advance of the agricultural frontier and inadequate agricultural practices have contributed to environmental degradation in the sub-watersheds of the Tapacalí and Inalí rivers in the department de Madriz, Nicaragua. Meanwhile, a lack of knowledge and environmental awareness increases the communities' vulnerability to socio-natural threats. Addressing that vulnerability through an innovative approach that integrates disaster risk reduction, climate change adaptation and ecosystem management and restoration (DRR/CCA/EMR), the Partners for Resilience (PfR) implemented the “practice-based learning” modality in their Learning Schools and Field Schools Program.

Implementation of interactive schools in the countryside

In addition to strengthening the capacities and knowledge of community members, this kind of applied and interactive learning also generated direct benefits in terms of saving economic resources, increasing productivity and improving the environment, as well as advances in gender equity.

The learning and field schools have been implemented in several parts of the world. In Nicaragua, the innovative element has been the application of a comprehensive approach that combines disaster risk reduction, climate change adaptation, and ecosystem management and restoration (DRR/CCA/EMR). The schools have represented an important step forward in community resilience to disasters and are an important component of the work of Partners for Resilience in Nicaragua. Community resilience is defined as a community's capacity: 1) to anticipate risk, limit the impacts and recover quickly; 2) and for learning, adaptability and growth in response to unexpected change. Applied successfully, this important work can be replicated in other communities in the country and the region.

1. The local context: Practices, knowledge and vulnerability

The schools were implemented in communities of the municipalities of San Lucas, San José de Cusmapa and Las Sabanas in the Nicaraguan department of Madriz. The communities there are vulnerable to climate change-related extreme weather events, the most common of which are droughts and heavy rains that cause

“This learning school was a great success for my family and me. I think I'm a producer with knowledge now and I'm better adapted to climate change because I'm implementing agro-forestry systems. This means I'll have more food: not just maize and beans, but also fruit, plants, cassava and vegetables. I'm improving the fertility of my soils and producing more.”



José Santos González successfully completed the learning school in the community of El Coyolito, San Lucas. (Photo: CARE)

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Bayardo Jiménez from the community of Los Mangos, San Lucas. (Photo: CARE.)

“Nobody can take away the knowledge I acquired in the school. For me, it’s better than a machete, because that’s going to go blunt, but my knowledge won’t.”

landslides. As revealed by Partners for Resilience’s VCA and CVCA vulnerability assessments⁴, their vulnerability is strongly related to an agro-ecological imbalance. Currently, a large proportion of the communities’ soils are traditionally used for the cultivation of basic grains such as beans and maize, as well as the establishment of coffee plantations and increased cattle ranching activities. This has had a negative impact on livelihoods and the environment as these activities have been developed without any planning and without taking into account any technical criteria or the vocation and productivity of those soils. In addition, local inhabitants apply traditional and non-traditional techniques that increase environmental degradation, including:

- Burning in agricultural and reserve areas.
- Deforestation of micro-watersheds due to the expansion of the agricultural frontier.
- Establishing crops on slopes and hillsides without installing soil and water conservation works.
- Contamination of water sources due to inadequate pesticide use.

These inappropriate practices are sometimes caused by the local inhabitants’ lack of technical capacities and knowledge of good practices, combined with a low level of formal education. As part of the disaster risk reduction program and the strengthening of community resilience through the application of the DRR/CCA/EMR approach, Partners for Resilience decided to address aspects related to knowledge and inadequate practices by developing teaching/learning processes with key actors from each community.



Presenting work results. (Photo: CARE)

The teaching/learning process was put into practice in the municipality of San Lucas through the creation of “learning schools” aimed at positively responding to the problem by providing theoretical and practical tools. Participating in these interactive schools, the farmers learn good practices and implement them on their lands and in communal areas, such as a community well or a water catchment area. In communities of the municipalities of San José de Cusmapa and Las Sabanas, the topics involved were integrated into the Partners for Resilience community micro-projects. The “field schools” implemented there had the objective of ensuring the long-term success of those micro-projects.

⁴ VCA = vulnerability and capacity assessment (a Red Cross tool); CVCA = climate vulnerability and capacity analysis (a CARE tool).

2. The “practice-based learning” methodology

The members of Partners for Resilience drew up the teaching curriculum based on each community’s particular characteristics. In these communities knowledge and experiences are mainly learned outside of the classroom and the local inhabitants’ knowledge is passed down from generation to generation, including knowledge related to the use of natural resources and livelihoods. The knowledge transmitted is basically linked to the subsistence farming culture and an irrational use of natural resources.

To effectively promote learning, the concept of “practice-based learning” has been applied. Approaches aimed at improving quality of life are taught in order to generate greater acceptance among community members. This extension methodology is based on the principles of adult education, employing a learning-by-doing approach. Adjusting that methodology to the community level involves applying micro-planning work to farm units, the community and the local area, which allowed the implementation of the municipalities’ watershed plans and climate change adaptation strategies to be promoted.

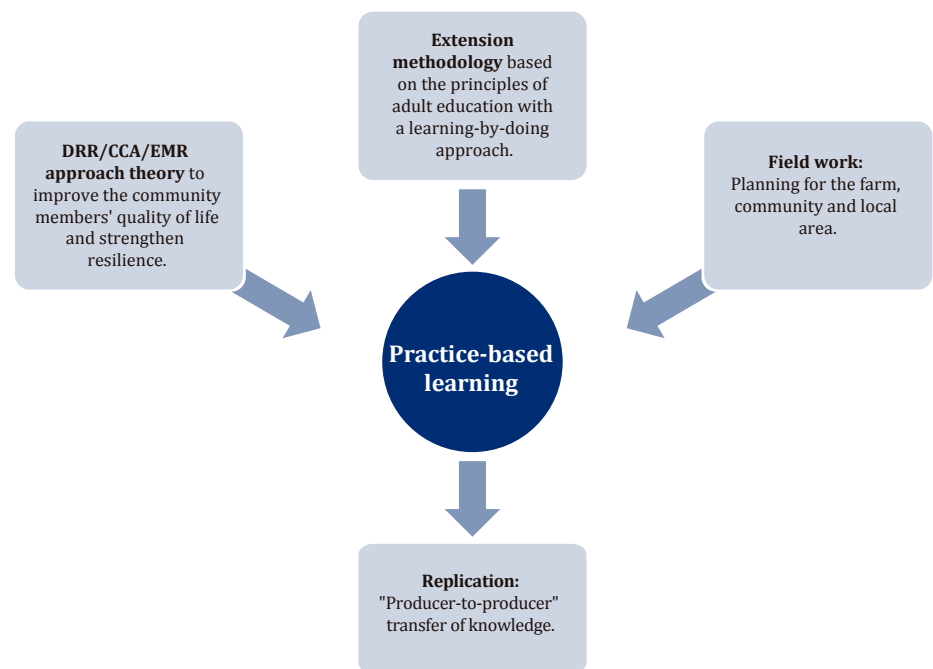
The “practice-based learning” methodology brings about a change in the community members’ behavior and productive culture. The methodology combines a theoretical teaching phase and the subsequent application in the field of the knowledge obtained. It also takes into account the aspect of working in the field, validation processes and teaching methods such as workshops and experience sharing visits. Rooting it in the communities facilitates the process of the farmers, leaders and promoters teaching other farmers, applying the “peasant-to-peasant” (in this case “farmer-to-farmer”) knowledge transfer methodology implemented by UNAG-PCAC⁵. As part of the Partners for Resilience Program, “practice-based learning” also includes the key elements of the Program’s innovative comprehensive approach, which consists of disaster risk reduction, climate change adaptation and ecosystem management and restoration.

This means that decision making in the communities, and even the learning and training, take into account the risks, the changing climate context and the value of ecosystem services. Through this methodology, the community members not only adopt management techniques appropriate to the characteristics of their livelihoods, but are also prepared for climate change and manage their natural surroundings well.



Photo: CARE

Figure 1. “Practice-based learning” methodology



“The learning school starts here in the school and ends up on our plot of land because we implement everything we learn.”

José Santos Gonzalez,
El Coyolito, San Lucas
Photo: CARE



⁵ National Union of Farmers and Ranchers (UNAG) and the “Peasant-to-Peasant” Program (PCAC).

3. The path to learning

The organizations in Partners for Resilience –CARE Nicaragua (through its partner the Human Promotion Institute – INPRHU-Somoto), Wetlands International and the Nicaraguan Red Cross—adjusted the principle of “practice-based learning” to the local context and implemented the learning schools or field schools.

3.1 The learning schools

As part of Partners for Resilience, CARE Nicaragua—through INPRHU-Somoto—and Wetlands International implemented two learning schools with six communities in the municipality of San Lucas: El Rodeo, El Cuyas, El Coyolito, Los Mangos, San Francisco de la Camayra and Rio Arriba. Seventy community members (34 men and 36 women) have graduated from the school. The following were these schools’ main objectives:

1. Raise the participants’ awareness through the development of activities related to disaster risk reduction, climate change adaptation and ecosystem management and restoration.
2. Exploit the communities’ existing human, economic and social resources.
3. Promote women’s participation in community development.

Productive issues, such as basic grain, vegetable and cattle production, were incorporated into the learning schools. Participants were taught to think about the changing climate context from a watershed- and agroecology-based perspective. The knowledge was then put into practice through the development of farm plans. They were also taught about the use of native seeds, agroforestry systems, soil and water conservation works, and feeding cattle in the dry season, as well as making experience exchange visits to different communities based on the idea of “farmer-to-farmer” knowledge sharing⁶.

The practices taught included: soil and water conservation works; agro-forestry and silvopastoral systems; and the application of organic fertilizers and insecticides with the aim of preserving soil fertility, adding organic material and fixing nitrogen, gradually reducing the need to use chemical fertilizers and improving the micro climate. The participants also learned how to obtain animal feed, as well as wood for construction and firewood from pruning, thus improving family income from the sale of firewood and wood. These practices were taught through a 12-module curriculum:

Figure 2. Learning school modules

Introductory course on the approaches: disaster risk reduction (DRR), climate change adaptation (CCA), ecosystem management and restoration (EMR), and gender.	Application of tools and practices for climate change adaptation: games on the topics of upstream/downstream ⁷ , well-managed and badly-managed watersheds, climate change, and planting cassava and rice.
Establishment of demonstration plots: maize and bean crops (sowing distance and methods, native and domesticated foreign varieties).	Soil health: micro-organisms, no burning, etc.
Soil fertility: type of soil; biofertilizer/ organic fertilizer; tests for filtration, fertility and organic material.	Soil and water conservation works (SWCWs): disaster risk reduction practices – live and dead barriers, live and dead fencing, irrigation ditches, infiltration pits, dykes, and stubble incorporation.
Good agricultural practices: integrated pest management, organic products, good pesticide management, pump calibrations, etc.	Agro-forestry systems: fodder bank, backyard, silvopastoral systems, alley cropping, etc.
Water and agro-ecological analysis: farm plan, water source contamination, management of water recharge areas.	Exchange of experiences: experiences in dry and wet areas.
Management and construction of home-made pluviometer: key information for taking decisions.	Field day: evaluation of the school’s results.

⁶ See or download the methodology document on SlideShare: <http://www.slideshare.net/CARENIC/herramientas-metodologicas-paraunaescueladeaprendiza-je2>

⁷ <http://www.slideshare.net/CARENIC/juego-cuenca-arriba-cuenca-abajo>

Due to the active, participatory and dynamic methodology involved, the implementation of the learning schools turned the participants into people who experimented with and replicated the knowledge. By learning about the context related to risks, climate change and ecosystems, the farmers acquire a broader vision of their plot of land and cultivation. The learning schools also turned their plots of land into a field of learning and demonstration. Through knowledge transfer, the inhabitants that participated in events, such as exchanges of experiences with other communities, effectively taught other community members the good practices they had acquired.

As a result, the comprehensive DRR/CCA/EMR approach was really linked to and implemented in the producers' daily lives.



Photo: CARE

3.2 The field schools

As an integral part of the Partners for Resilience community micro-projects, the Nicaraguan Red Cross developed “field schools” in the following communities: La Fuente and El Rodeo in the municipality of San José de Cusmapa; and Miramar, El Castillito and El Pegador in the municipality of Las Sabanas. The field schools incorporated the innovative approach combining disaster risk reduction, climate change adaptation, and ecosystem management and restoration. They were designed to allow the knowledge transfer required to implement the productive and risk and ecosystem management activities, guarantee their long-term sustainability, and sensitize community members on the topics of risk, climate and ecosystems. A total of 132 people (52 men and 80 women) participated in the schools.

The micro-projects were designed in a participatory way through workshops with the local inhabitants, who therefore also decided on the subjects included in the field schools. The participatory nature of this process helps ensure that the inhabitants take on the micro-projects as their own and that learning provided in the field schools is both achieved and then applied.



Cleaning-up La Bruja Lagoon in the community of El Pegador during the Community Ecotourism Field School. (Photo: Nicaraguan Red Cross)

The field schools addressed subjects that are not very common, such as ecotourism, flower production, the construction of eco-stoves (improved, firewood-saving stoves), and the establishment of agroforestry systems. The communities have taken on the subjects taught and the participants have said they found the schools to be a different way of receiving training and seeing for themselves how well the technologies and practices work.

The methodology allows the contents to be defined, organized and linked so that the participants get a better and more complete understanding of the issue involved. For example, in the community of El Pegador the process initiated with awareness-building talks on concepts related to ecotourism. The process will end with the operation of the system (service infrastructure) established around La Bruja Lagoon, which is in the process of being declared a wetland. In El Castillito the process started with discovering the community's ecosystem potential in relation to its microclimate

and will end with an evaluation and feedback process when the flower production is being sold. In the case of the community of El Rodeo, the training started with the design of family vegetable plots and closed with the preparation and consumption of the produce as part of the community diet.

As a result, those involved display a better ownership of the issues, and therefore greater motivation, because they learn to do things practically. This could be seen in the knowledge and practices the participants have acquired after several months of working through these processes. For example, in the community of El Rodeo in the municipality of San José de Cusmapa, 25 families have improved their diet, incorporating vegetables that they themselves produce in their backyards, even in times of drought. This has resulted from the implementation of the “Community Agroforestry and Forest Conservation” field school that lasted for seven months. The subjects taught included the management of family vegetable plots, controlling pests and diseases with organic products, organic fertilizers, artisanal vegetable seed production, vine crops, and agroforestry systems.

Bayardo Cruz Miranda Jiménez from the community of Los Mangos. (Photo: CARE.)

“Before, I used to sow empirically and with faith that it would rain. Now I do soil conservation work to avoid erosion on my land and to make my soil more fertile. I produce more beans with a smaller amount of seed on less land now, because I have the correct sowing distances. Just now, thanks to the fact I incorporate the stubble and despite the drought, I got 200 pounds (90.9 kilogram) of beans from 10 pounds (4.5 kilograms) of seed both for consumption and to sow in the next cycle. This has helped make my soil fertile and improved its moisture. I feel like I’ve achieved a lot.”

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Jose Ramón Rivera calibrating an A-frame level in the Agroecological Coffee Field School in the community of La Fuente. (Photo: Nicaraguan Red Cross)

4. Success stories

The following are descriptions of successful experiences from both kinds of school implemented by Partners for Resilience in the department of Madriz.

4.1 Success story I – Learning school in El Chilamate improves production and women’s participation

The learning school was established on and named after a farm called “El Chilamate,” which belongs to Pedro Godoy. All of the theoretical and practical activities were carried out on the farm, which is in the community of Moropoto in the municipality of San Lucas. The school’s teaching process lasted for four months, with the frequency of the sessions adjusted to the farmers’ working hours in the fields. As a result the participants met every Friday from 8am to 1pm. Twenty-six people participated (13 women and 13 men), including heads of family and promoters from the communities of El Coyolito, Los Mangos, Moropoto and El Cuyas in the municipality of San Lucas.

Thirty-five-year-old Bayardo Cruz Miranda Jiménez from the community of Los Mangos is one of the farmers that graduated with merit. He was an example to follow because he put into practice everything he learned. The work done on his productive plot of land was replicated with the other students at the school and some of the farmers in his community:

The learning school made significant advances in terms of increasing women’s participation in community development. According to Sonia Miranda, a producer of basic grains from the community of Moropoto in the municipality of San Lucas who attended the learning school:

“It was very important for me to be in this learning school because I learned that we can also state our opinions in our family and I can make decisions with my husband about the work we do on our plot of land.”

4.2 Success story II: Experience sharing visits for replication in other communities

The sharing of experiences among different communities has been a success story in terms of the replication and transfer of knowledge. Male and female producers affiliated to the Association for the Livestock Development of Achuapa (ASODEPA) in the department of León, Nicaragua, visited the learning school held in the community of Moropoto to share their experiences with the people there. They selected Moropoto because it is located in a dry area similar to Achuapa. During the visit, the ASODEPA representatives presented the experiences and knowledge they acquired in the school.

ASODEPA technician Eva María Reyes Calderón commented that: *“This exchange is very important and was very successful. Despite being in a dry area, our commitment is to replicate the experience with our producers in the municipality. The most characteristic thing about this school is how the producers incorporate the climate change and risk reduction theory learned here on their plots of land. And that’s where their empowerment comes from.”*

4.3 Success story III – Women protecting biodiversity through flower growing

El Castillito is a community located in the nucleus zone of the Tepesomoto-La Patas-ta Natural Reserve in the municipality of Las Sabanas. Its inhabitants have dedicated themselves to intensive agricultural and livestock activities that have altered their natural resources, making hillside instability one of the community's greatest threats. In recent years, the community has also noted a change in precipitation, which is becoming more irregular and therefore affecting the crops.

This situation generated the need to develop a field school that would help the people better understand their surroundings and develop new productive alternatives that protect the environment. El Castillito's agro-climatic and ecosystem conditions mean that flower varieties grow naturally there, brightening up the inhabitant's yards and gardens.

Through a participatory process, flower growing was identified as a livelihood diversification measure favoring the reduction of the risk of landslides, adaptation to a more unpredictable climate and forest regeneration.

"Through community assemblies held by the Nicaraguan Red Cross we could see the needs the community presented and discovered the opportunity for cultivating and marketing flowers to generate more income for our families," explained Digna Amparo López, who participated in the Community Flower Growing Field School.

A total of 27 women participated in the field school and the teaching methodology allowed four groups to be organized in four gardens. Each group was provided with all of the conditions required to implement the learning through a "learning-by-doing" methodology. The participants received training in administration, agronomic management, agroecological techniques and value added for marketing. The flower species grown are roses, anthuriums, daisies, calla lilies, ferns, heliconias and hydrangeas⁸.

5. Lessons learned

The experiences of the learning schools and field schools generated a number of lessons that are key elements for their replication in other areas of the country, the region or the world.

- The incorporation of the DRR/CCA/EMR comprehensive approach theory allows the community members to have a broader perspective that reaches beyond their particular plots of land to the local area, the watershed and climate changes.
- The participatory creation of the schools guarantees interest in the development of the modules and the assimilation of the curricular contents. Building consensus with the participants to define dates and topics is also very important because it guarantees school retention.
- The establishment of plots of land for the validation and application of practices helps ensure the participants' dynamic integration.
- Topics and practice methods should be planned that are easy to adopt and to replicate on the producers' farms.
- The experience sharing visits in which the producers participated amount to learning reinforcement methodologies that were implemented in a coordinated way. They produced excellent results in the topics being reinforced such as community seed banks, river watersheds and the establishment of agroforestry systems.



Women from the community of El Castillito making flower bouquets in the Community Flower Growing Field School. (Photo: Nicaraguan Red Cross)

"I'm very happy with and grateful to this project because it's benefited us women who are mothers and housewives, improving our lives and giving our children a better future. We've learned a lot in the training sessions the Red Cross boys have given us on how to manage our gardens and how to look after the flowers and sell them." Digna Amparo López, participant in the Community Flower Growing Field School.



⁸ The scientific names are: roses (Rosaceae), anthuriums (Anthurium andreanum Linden), daisies (Bellis perennis), calla lilies (Zantedeschia aethiopica), ferns (Pteridium aquilinum (L.) Kunth), heliconias (Heliconia bihai) and hydrangeas (Hydrangea macrophylla).



Efrain Reyes Jiménez, community of Moropoto, San Lucas. (Photo: CARE).

“Work has been done on the management of forestry plants: how they are going to be managed, how shade can be regulated. This wasn’t done before and the trees were cut down – but this has been changing during the learning schools. The community is pretty sensitized on these aspects today. We community members manage contour farming, drainage ditches, infiltration pits, and live and dead barriers. Many improvements can be seen on the plots of land now.”

- Although the communities have difficulties, limitations and problems, they also have potentialities that have to be highlighted and discovered with the beneficiaries.
- This kind of applied and interactive learning can generate direct benefits in terms of saving economic resources, increased productivity and advances in the area of gender equity.



Photo: CARE

6. Conclusions: Schools apt for replication

The “practice-based learning” methodology that incorporates the innovative comprehensive disaster risk reduction, climate change adaptation and ecosystem management and restoration approach is an effective way of strengthening resilience in communities that are vulnerable to disasters through the transfer of practical knowledge. The participants acquired the knowledge and at the same time became promoters because they transfer that knowledge directly to other members of their communities.

This methodology has the potential for replication in other areas, not just Nicaragua or Central America, but also in other vulnerable communities in the world, as long as the knowledge is adjusted to the local context of vulnerability.

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