

**Education for Sustainable Development in a Semiarid Rural Area: a
Case Study of a Self-Help Tourist Housing Project in Paraguaná,
Venezuela**

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Abstract

The sustainable development of arid and semi arid areas in Paraguaná, Venezuela is achievable if the local population can be educated to recognize and overcome the problems that prohibit the areas development.

This study is a contribution to an ongoing project in which the local Universities are educating communities to incorporate new elements and technologies within their ancestral technologies. This self help housing project aims to increase the durability of housing and improve living conditions. Presented here is an experience in Paraguaná, Venezuela, where the selection of an adequate group to participate in the Self-Help Tourist Housing Project is vital to the success of the sustainable development educational program.

The study uses various research techniques to enable an improved and targeted educational program to be recommended. These techniques include questionnaires, video recordings, observations, seminars, workshops and focused interviews. The utilizing of these varied techniques would allow for an understanding of the current problems and would highlight the most suitable educational methods that would enable sustainable development.

Community members participated in a training program designed to raise awareness of local problems and taught construction methods that would improve their buildings resistance to the harsh environment. By analyzing the changes in attitude and ability of the educational group after the training had taken place would enable the effectiveness of the self help training to be concluded. It also highlighted the importance that selecting and targeting participants played to achieve the ability and attitude necessary for the success of the sustainable development of the self help housing project.

The research project also highlighted other barriers to sustainable development and a tourist approach has been considered relevant for the sustained development of housing as the geographical location and opportunities offered through a tourist circuit would complement the aspirations of the local community of Cerro Pelón. To enable the Self Help Housing Project to be both sustained and successful, it is important to ensure that the communal council within Cerro Pelón contains members who realise that education is vital in achieving sustainable development.

Word keys: ESD in rural communities, homogeneous community, communal councils, rural tourism

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Chapter 1: Introduction

Drawing from principle 1 of The Rio Declaration 1992 (2006):1 which states, "Human beings are the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature", this paper raises the following question. How can the communities in the semiarid area in Paraguaná, Venezuela, achieve a healthy and productive life in harmony with the harsh natural surroundings that they face? The extremely low durability of the constructions built in Paraguaná has created many economic and social problems for the local communities. These include inadequate housing, high unemployment, crime and low incomes. This study aims to explore the factors causing these serious problems and recommend real opportunities that will improve the lives of the local population. By educating the community in understanding their problems and by teaching them in sustainable solutions they will be better placed to be able to create a sustainable community for future generations. The study highlights that by creating a focused educational program that incorporates and utilizes the natural materials available, and the technologies innovated in Universities, the community of Paraguaná will be able to create a sustainable and productive future (Principles 8, 9 and 10 of the Rio Declaration, 1992).

This study aims to recommend and deliver a focused and targeted educational program that is centre to the success of the sustainable development

The strategy implemented in this study, to enable the objective of achieving the education for sustainable development focused on researching and targeting the appropriate focus group. By selecting the correct members of the community to be trained and educated would enable the self help training program to be successful. As the region of Paraguaná where Cerro Pelón is located is the most poorest and education

is inadequate it is important to train members of this community whose aptitude and ability will enable the necessary skills to be absorbed and transferred. Enabling the skills to be transferred will ensure that the self help training program will be sustained in the future and also the development of the region will be sustained in the future by members of the community.

The education of the local community to enable them to build sustainable tourist accommodation is of great personal interest, as it concerns an area in which I have lived my whole life. It is considered a duty to help educate the most disadvantaged communities in this region and will enable me to gain first-hand experience in educating for sustainable development. The thesis also holds professional interest as the area has great opportunities for increased tourism and by implementing a targeted educational program the area will receive rejuvenation and the local economy will be improved.

The research departments of two local Universities are working on a project regarding Self-Help Housing using natural materials and technology. This presents the opportunity to implement an educational program that will deliver sustainable development. The self help housing project will enable the community to become self sufficient and give fresh ambitions and motivation to the poor community of Cerro Pelon.

The contribution of this thesis to the self help housing project focused on recommendations concerning education and training that would enable sustainable development. By developing the attitudes, skills and knowledge of the participants of the self help project this would enable them to make and act on informed decisions now

and in the future. The selection of participants of the self help project would also play a vital role in the sustainability of the educational program, so this thesis will target a more accurate group of participants in terms of their attitude and ability for the self help project. It is important to use the resources available to educate the members of the community who have the ability to transfer the skills taught. This would enable improved results in the self help development scheme and would ensure that the project would be sustainable. Research techniques implemented included preparing and administering questionnaires, preparing and holding seminars and workshops and researching into the community's opinions regarding factors that would affect the success of the education and training scheme.

The educational program will try to create a positive change in the community's attitudes and aptitudes. By developing an inherent change in culture and by educating the benefits of creating sustainable development it should allow for the future continuity of this progressive change. Finally the concluding strategy focused on interviewing members of the community in order to gain an insight into the community's beliefs regarding the education and training that would need to take place for sustainable development. Educational tools were developed to present to future members of the self help project that would highlight important sustainable factors.

In some of Venezuela's regions deterioration of materials is so serious that it departs from the international norms, as is the case in the north-eastern part of Paraguaná, where corrosion rates are presented up to 1000 microns of loss per year of steel thickness (figure 1). This harsh environment damages the local housing and tourist infrastructure greatly, even reducing the building into scrap metal. This has harsh consequences for

the environment and creates economic instability. The local population must be educated into the reasons why their constructions are reduced to nothing. By educating and training them in techniques to combat this harsh climate will enable the development of the area to be sustained.



Figure1: Map of Falcón state in Venezuela showing corrosiveness of the area under study (Cerro Pelón). Source: Laboratory corrosion CITEC-UNEFM, 2000.

The local community are uneducated in technologies developed at Universities that improve their own ancestral technologies to benefit the sustainability of their community and also improve living conditions. Researchers at Instituto Universitario de Tecnología Alonso Gamero (IUTAG) and Universidad Nacional Experimental Francisco de Miranda (UNEFM) are researching into methods and materials to best help the communities that live in Cerro Pelón. Their aim is to enable the community to construct affordable housing using advanced techniques and improve the material used in construction by using the local materials that are available in their vicinity (UNEFM, 2008). By offering a Self Help Training program the Universities hope to train the community in the application of these materials. This thesis will aim to focus the educational content of the self help program to deliver sustainable development.

Paraguaná Peninsula measures 60 kilometres from north to south, 54 kilometres east to west and has 300 kilometres of coastline, it is located in an area which has high radiation and high wind speeds. These winds blow constantly all year-round in a predominantly north-easterly direction bringing moisture-laden marine air over the year. This means the region is an attractive tourist destination allowing recreational activities with sports like surfing and kite surf. Figure 2 shows speed in knots and direction of winds in this area which results in high corrosion of the surrounding buildings and destroys the infrastructure.

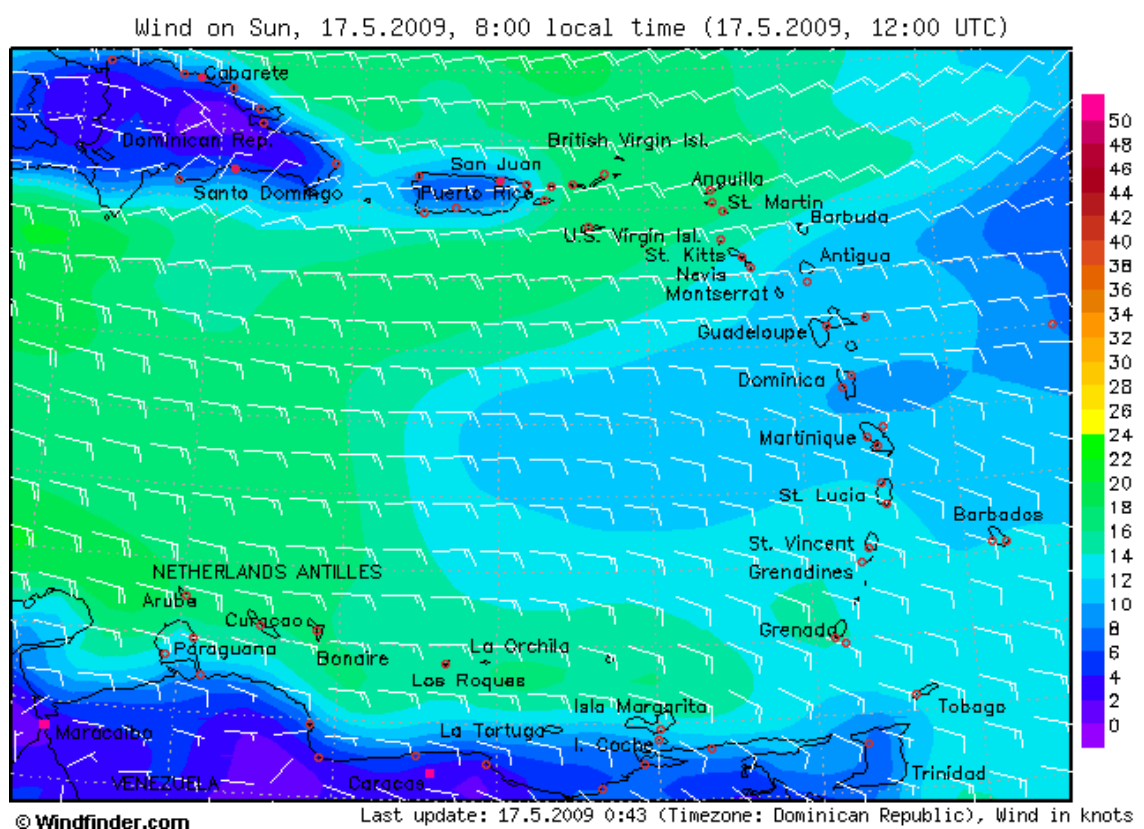


Figure 2: Map of Caribbean region shows speed in knots and direction of winds in this area. Source: Wind finder (2009).

The constant steady direction and high wind speeds creates a serious problem in eroding the local infrastructure and prevents the housing constructions from being sustainable economically due to the high costs of constant maintenance. This restricts the

development of the communities and often the buildings are left to erode as the communities are not educated in the skills that are needed to maintain them.

This thesis will focus on educating the local community of Cerro Peon in the skills required to enable them to achieve a sustained development of their community.

Environmental:

Reducing the damage caused to housing, conventional buildings and equipment exposed outdoors in the corrosive atmosphere which is creating great waste. It is damaging the environment by creating a mass waste of land and causing high pollution from greenhouse gases (GHGs) as the consumption of steel and cement is increased in order to maintain the buildings. It is also generating higher carbon dioxide (CO₂) waste as more transport is required to move the conventional materials.

By educating the community in the use of improved materials and construction techniques will enable the environment to be developed which is sustainable.

Socially: The educational program will address the housing problem and organize the community in ways that benefit them both individually and collectively. The education will empower them with leadership skills that will enable the transfer of their knowledge and enhancing social capital.

Economically: Education in erosion prevention. Improved skills, knowledge and values will lead to the sustainable use of local resources.

The Self Help Housing project

In the Falcon municipality, one of three municipalities that make up the Paraguaná Peninsula in Venezuela, a Self Help Training program is being run by the two Universities in the region (UNEFM and IUTAG). The training program will be conducted using a non-formal structure of seminars and workshops, which offers the local community of Cerro Pelón education in using local materials and technologies to improve housing quality.

The self help project has been created as there is a need to support the community of Cerro Pelón as they are in desperate need of durable housing. Currently the environmental factors are creating such a corrosiveness which is preventing the inhabitants of this area to develop. The vast majority of communities living in Paraguaná are highly vulnerable to environmental conditions and the debate regarding climate change involving future threats will create even greater aridity and increased salinity in the environment. Currently the housings in Cerro Pelón are constructed using materials that are unsuitable for that area due to the high corrosive conditions in the environment. Also living conditions inside these dwellings can sometimes be unbearable as the materials currently used trap the heat in resulting in temperatures of around 40C.

Research staff involved in the UNEFM and IUTAG (now the Polytechnic University), focused on developing new technologies in constructing houses. They researched into various types of materials and new products which best act as anti corrosive materials in the construction of buildings. It specifically focused on the benefits of using additives obtained from resistant plant species (Aloe Vera). Aloe Vera is found in abundance in

the local area of Cerro Pelón so the results of using this material in construction are relevant to the sustainable development of their community.

This thesis involves assessing the level of education the local community has regarding the problems associated with the low durability of their homes. It also aims to establish the attitude and desire the community has for self-help housing. The thesis also hopes to educate the local community in the importance of sustainable development.

The accurate selection of the members of the community would allow the education for sustainable development to be successful, and would also empower the community in the necessary transferable skills needed to enable the future sustainable development of the self help program.

The self help housing program is an opportunity for the community of Cerro Pelón as currently they can obtain economic resources and grants for the development of their community through the Venezuelan state. Educating the community in the application of natural resources and technology developed by higher education institutions, and by demonstrating efficient methods of retransmission of this knowledge, will enable Paraguaná's east-coast to become a centre of development.

In order for the successful sustainable development of the community it is considered appropriate to involve more families in the training process. This study aims to highlight the best methods used in order to select the most suitable people from the community, while also training them to be instructors in the educational program. It is important to empower the local community with the skills required in order for them to teach future generations in the benefits of a sustainable community.

The focus of this work is presented as a dissertation for the MA in Education (by research) at the University of York.

Chapter 2: Literature review

This chapter reviews the literature regarding themes which this study is supporting i.e. DESD, ESD in rural areas, ESD in non-formal education, organization of communities, and the training for sustainable building. It also reviews literature detailing the corrosive elements that affect the durability of housing and public services (water and electricity) in saline atmospheres. The literature review is undertaken at an International level regarding the cooperative programs and at a National level for the background of the study. Finally the study presents the research questions and the aims and objectives.

UN-Decade of Education for Sustainable Development

In December 2002, the United Nations General Assembly (UNGA) adopted resolution 57/254 to put in place a United Nations Decade of Education for Sustainable Development (DESD), spanning from 2005 to 2014, and designated UNESCO to lead the Decade. The founding value of education for sustainable development (ESD) is respect; respect for others and respect for the planet and what it provides us with (resources, fauna and flora). ESD aims to challenge us all to adopt new behaviours and practices in order to secure our future.

The DESD breaks down the traditional educational scheme and promotes:

- Interdisciplinary and holistic learning rather than subject-based learning
- Values-based learning
- Critical thinking rather than memorizing
- Multi-method approaches: word, art, drama, debate, etc.
- Participatory decision-making
- Locally relevant information, rather than National

UN- DESD objectives

The DESD aims at changing the approach to education so that it integrates the principles, values and practices of sustainable development. Its primary goal is to: “encourage Governments to consider the inclusion [...] of measures to implement the Decade in their respective education systems [...] and national development plans.” (United Nations General Assembly resolution 59/237)

The Decade’s goals can be broken down into four key objectives:

- Facilitating networking, and collaboration among stakeholders in ESD
- Fostering greater quality of teaching and learning of environmental topics
- Supporting countries in achieving their millennium development goals through ESD efforts
- Providing countries with new opportunities and tools to reform education.

UNESCO, 2009

Education in rural areas

Of particular significance is rapidly increasing urbanization, more than 3 billion people in developing countries (about 60% of its population) and almost half the world population live in rural areas. Education is crucial for addressing poverty in this environment and for achieving sustainable rural development. In 2002, during the Second Earth Summit in Johannesburg, the United Nations Organization for Food and Agriculture Organization (FAO) and UNESCO launched a cooperative initiative to increase access and improve basic education for rural people.

Educational activities cannot be confined to formal education today but should extend to the broad field of informal education or non-formal education (voluntary associations, museums, news, documentaries ...) without forgetting that we live in the digital era, in which the Internet is fostering global diffusion with constant connectivity that must be

taken critically (Hayden, 2008). Informal education can include other training forms; such as workshops and seminars that hold a specific purpose.

ESD in non-formal education

While many delegates from the United Nations Commission for Sustainable Development (CSD) who met with enthusiasm in 1998 agreed that ESD is essential to achieving sustainable development, they failed to resolve how best to implement change. Reconciling the overall concepts of ESD academic programs with local relevance is a difficult process. It must make many decisions, and make many assumptions about the future and analysis of local cultures. (McKeown, 2002)

In order to create academic programs for ESD a detailed knowledge of problems and of the resources available is required. The local culture must also be studied in order to produce accurate predictions regarding the future. Although the ESD programs may be well or poorly run, the consequences of doing nothing are unacceptably high. Therefore, even when not directed with precision, it is imperative to create an ESD program. (McKeown, 2002)

If this is complicated in formal or regular programs in education systems, it is much more complicated at non-formal levels. The training undertaken in the Self Help program along with the educational seminars and workshops that this thesis recommends is considered a contribution to ESD, as the population seeks to not only address their problems but also raise awareness and improve their understanding of the problem.

Organisation of communities in Venezuela

Venezuela has adopted a Law of Communal Councils, which encourages people from diverse populations to group in communal councils that take into account geographical proximity. It also aims to join common interests and affinities that enable them to build a cooperative; where the national government can grant economic resources through community banks. This form of grouping will allow the inhabitants of towns across the country to decide on which projects are priorities.

This Law was adopted on 6 April 2006 by the National Assembly of the Bolivarian Republic of Venezuela and Article 2 states:

Communal councils in the constitutional framework of participatory democracy are instances of participation, coordination and integration between various community organizations, social groups and citizens, enabling the organized people to exercise direct management of public policies and projects to meet the equality needs and social aspirations of communities in building a society”.

Concerning the Principles of Law of Communal Councils, Article 3 states:

“The organization, operation and action of the communal councils is regulated by the principles of shared responsibility, cooperation, solidarity, transparency, accountability, honesty, effectiveness, efficiency, social responsibility, social control, equity, social justice and equality and gender”

It is further defined in Article 4 that a Community is a:

"social cluster of families or citizens living in a particular geographical area, that hold a shared history and common interests, who meet and interact, use the same public services and share similar needs regarding: economic, social, urban and others "

(Translated from Spanish)

The community councils are working committees; focusing on "education" and "housing and habitat". These community councils are directly relevant to this study and it would be helpful to use this legal tool in order to educate for sustainability the rural semiarid region of Paraguaná. Community-supported higher education institutions such

as the UNEFM and IUTAG in Coro, Falcon State, Venezuela, are examples of higher education institutions that have constant interaction between themselves and the community. These Universities aim to apply the results of their research in new technologies used for constructing, with the objective of training and improving the quality of life for its residents.

“Glocal” action for SD: fight against poverty at the Iberia-American countries

As stated by Gonzalez and Alba (1994):⁶⁹ "the motto of the German environmentalists 'think globally but act locally' over time has proved its validity, but also its limitation: it is now known that we must also act globally". Novo (2006) emphasizes the transnational nature of contemporary environmental issues and the need, therefore, for "glocal" analysis and action; referring to global and local measures simultaneously to address this problem. This refers back to policy measures, which along with education and technology are essential to lay the foundations for a sustainable future.

The Iberia-American countries in the region have established "Educational Goals 2021: the education we desire for the generation of the Bicentennial," a project that aims:

“By 2010 to agree a set of goals and indicators that gives promotion of education of each country. The ultimate goal is to achieve over the next decade an education that responds satisfactorily to ever more pressing social demands in the fight against poverty, which supports the rights of women and includes the disadvantaged, especially ethnic minorities, indigenous populations and Afro-descendants”. OEI (2008):15 (Translated from Spanish)

The text was developed following the agreement reached at the XVIII Ibero-American Conference of Education in El Salvador on 19 May 2008. This first version is aimed at facilitating the debate among all countries regarding the education approach for the

generation of the bicentennial. This date is the 200th anniversary for Venezuela regarding its independence from Spain and Portugal.

Rural communities toward sustainable cities

A multidisciplinary approach is extremely helpful for addressing the many needs that arise in large cities, especially in rural communities who are most disadvantaged because their members are minority groups who lack essential services. As the world population continues to grow, rural communities and inward urban migration will continue, hence it will become increasingly important to address and plan for the future to enable these cities to become sustainable. ONU (2003)

This need led to the organization of the First United Nations Conference on Human Settlements held in Vancouver (Canada) in 1976 and more recently to the realization of the European Conference on cities towards sustainability, held in Aalborg 1994, which led to the Aalborg Charter or the Cities Summit 1996 United Nations Habitat II, also called the City Summit held in Istanbul (Turkey), the final declaration in the preamble, states:

"The Habitat Agenda is a global call to action at all levels. It offers, within a framework of goals and principles and commitments, a positive vision of sustainable human settlements, where all have adequate shelter, a healthy and safe environment, basic services and productive and freely chosen employment. The Habitat Agenda will guide all efforts to turn this vision into reality." ONU (2003):5

The rural communities in Paraguaná, Venezuela-The Municipality Falcon

From the above statement, the problem to be addressed in this study can be identified: The Municipality Falcon in Paraguaná, Venezuela, is the area where the resources are most scarce and is also the least populated in this peninsula, being made up of rural populations with many problems. Most of these problems are caused by the harsh characteristics of the atmosphere which has very corrosive properties. However the deterioration of the materials with which their houses are built is so serious that it prevents the community from developing their constructions. Within this area of the country, corrosion rates in building materials are so high that the resident housing is rapidly reduced to scrap material (Figure 3 shows the hotel complex located near Las Cumaraguas Salina (salt mine from sea water) that lasted for five years due to corrosives).



Figure 3: Hotel Resort "Dunes Caribbean" on the east coast of Paraguaná, Municipality Falcon, next to Las Cumaraguas Salina.

The environmental and economic damage is affecting the families that live in this region not only in their homes, but in public services like water and electricity that is

constantly interrupted by the same corrosive elements; the salt air corrodes the water supply pipes and electricity lines (figure 4).



Figure: 4. Electricity line and equipment, next to Las Cumaraguas Salina

The housing project “Cerro Pelón”

The local economy of this rural area can grow with the aid of appropriate local technology and by applying high quality and resistant materials for construction. But there are many conditions and questions in order for the housing project to be successful.

Is the self help housing project focused efficiently on education and training in order to achieve sustainable development?

Is the self help project targeting and selecting the appropriate members of the community, in terms of their ability and attitude to education and training?

Housing construction in clay- improved use with-in communities of Latin-America

The overall global acceptance of "constructions in clay" is poor, and such buildings are unfortunately associated with low durability housing where people with low incomes reside. Often the constructions are built using inadequate types of soil or mud and lack the oversight from those who can help improve the constructions. This applies to institutions that work and research in construction using clay, and who develop technologies for improving this ancient building material. They also prepare regulations for the proper use in developing housing to withstand certain conditions, especially problems such as earthquakes that have affected communities in Latin America.

The Catholic University of Peru (2007) responded to the problem of vulnerability in housing made of clay. A coastal community that was hit by an earthquake in August 2007 was educated by the University in the value of using adobe (mud bricks) for construction, particularly in conserving energy. The community was educated in the manufacture of clay blocks which took into account existing regulations in Peru.

Groups of researchers from Latin America (IBEROTERRA) in the CYTED Program and the France Program "CRATerre" worked for 15 years on new techniques in creating a building material which was mechanically more resistant and also less vulnerable to water. These investigations have provided support and guidance to countries like Venezuela; however special considerations have to be taken into account for the extreme weather conditions. Also the appropriate minerals and the use of natural additives need to be taken into account when being used for construction.

The adaptability of buildings to climate change

Since climate change is a global reality where some areas are more susceptible to destruction than others, international institutions have expressed the need for "adaptability" to these changes, i.e. adaptability to conditions due to increased salinity, increasing aridity and rising sea level. This applies to regions like Venezuela, Paraguaná, covered by this study. Therefore it is fundamental to research into how to make materials more resistant to salinity, erosion, wind speed and moisture from the sea.

Paraguaná conditions are very specific and very particular to this region of Venezuela. Researchers in UNEFM and IUTAG institutions in Falcon, Venezuela, have very specialised knowledge of the local area so are in the best position to help these communities in their efforts to preserve their homes. The Universities are also working with materials and studying environmental conditions in this semiarid region of Paraguaná. They have also taken into account the experience of Iberoterra and CRAterre programs.

Climate change involves adverse changes to the arid and semiarid coastal regions, causing possible sea level rise, creating more drought and higher salinity percentages. This will cause higher corrosion and will decrease the quality of life for the local community of Cerro Pelón. Therefore it is very important to support higher education institutions to educate the population in these regions to adapt their buildings in order to increase the constructions lifespan. By educating the community in the use of new materials they should be able to develop a community which is sustainable.

The community work on the use of clay and Aloe to enhance durability of homes in saline semi-arid regions of Venezuela

In Venezuela, researchers were not just interested in looking to improve the behaviour of ancestral material but also wanted to train the community in the use of clay (IUTAG) for housing construction. They wanted to demonstrate the potential uses of Aloe Vera in order to tackle the problems of corrosion and the low durability of the materials (UNEFM). The University has found wide applications for the anti-corrosive properties of the resinous substances of Aloe, and the fact that corrosion rates have a sharp rise in the east coast of Paraguaná, up to 40 times higher than other regions in Venezuela, as referred to in Section C of the book on Metal Corrosion and Protection in Latin America (CYTED, 1999) in which UNEFM has participated means that the use of Aloe is pertinent.

The experiences of UNEFM and IUTAG researchers in Cerro Pelón in the use of clay and aloe, and with the support of this study will aim to improve the living conditions of the communities that live in the semiarid region and corrosive conditions of Paraguaná. The people of this region urgently need to be assisted and educated in order to improve their quality of life. This thesis will recommend an educational program that will focus on informal training (seminars and workshops). It is of equal importance to ensure that the community continue to learn and to manage their own problem in order to achieve the sustainable development of their community.

Background - The project Cerro Pelón

In Cerro Pelón, Venezuela, the UNEFM and IUTAG which are the oldest higher education institutions in the state of Falcón (31 and 32 years respectively founded), set about forming a group containing members of the community from Cerro Pelón in order to train them in methods of Self Build housing. The training aimed to highlight the importance that tourism can play in improving the community and also aimed to train the community in techniques and materials that could be used to improve the corrosive resistance of their houses.

The Cerro Pelón project began with a diagnosis of the location of civilian buildings, located on the East side of Paraguaná, specifically, an evaluation of the situation of houses and infrastructure in this area. It was found that damage caused by the environment to the constructions decreased significantly as they located homes away from the coast (east coast Paraguaná), it was also noted that further to the east the land consisted of dunes and lagoon deposits, which is unfit for housing settlement and construction.

The Cerro Pelon study also observed the traditional construction techniques which were used by the inhabitants of this region. The majority of houses were constructed using traditional methods (61%), i.e. reinforced concrete with zinc roofs. These would become very hot and would be prone to corrosion. Other houses were made from mud sediments from the region and finished with lime and cement. The number of persons per household ranged from 4 to 11; only one case was presented where a single person lived alone. Overcrowding is not a characteristic of this region and the houses with more occupants had several rooms for sleeping. It was noted that most houses are less than 20 years old while a single house was built over 140 years ago. This non-

conventional house is made of mud. These findings indicate that the tradition and culture of the use of mud for construction has been lost in this region, despite the wealth of minerals found there.

After the self help training program had been taught to the group from Cerro Pelón, an analysis of the change in the participant’s aptitude and attitude was undertaken. The results are shown in figure 5.

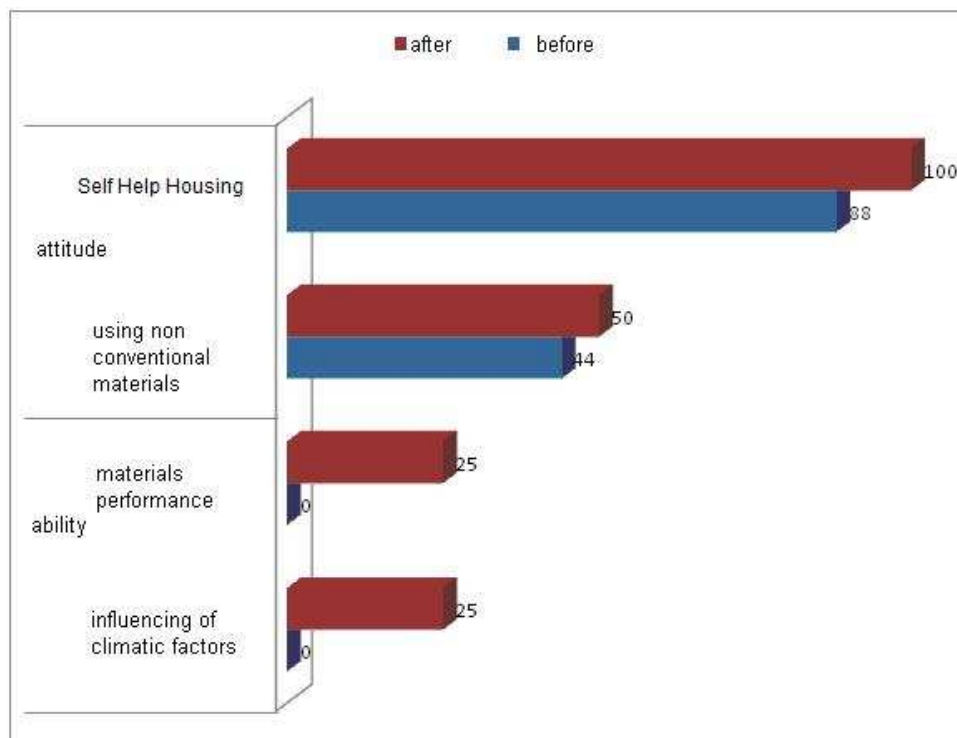


Figure 5: % of difference in attitude and ability, before and after the first training session

Analysis of these results shows that only 5 of the 18 individuals in the population of Cerro Pelón who participated (around 25%) assimilated knowledge well. There was a small improvement in their attitude towards using unconventional materials such as soil and clay in the construction of houses and a slight improvement in attitude for the self help project.

ESD Thesis- The contribution to the Cerro Pelón project

This thesis aimed through a process of informal education, to educate people to build and locate sustainable housing where solar and wind energy in that area could be used efficiently. The project also aimed to educate the community in methods of handling scarce water supplies in that region by highlighting applications for the re-use of grey water and methods of creating dry pit latrines.

The educational plan for the project "Cerro Pelón" refers not only in educating the use of local resources for constructing sustainable self-help housing, but also in educating new sustainable technologies that can contribute to the development of this semi-arid rural area. This thesis will support the Cerro Pelon project, in terms of focusing the education to achieve a sustainable program.

While many delegates at the UN Commission on Sustainable Development (CSD) meeting in 1998 enthusiastically agreed that ESD was essential for achieving sustainable development, they could not agree on how best to implement it. Progressing from the global concepts of ESD to a locally relevant curriculum is a difficult process. Many decisions, assumptions about the future and examinations of local cultures have to be made. Creating ESD curriculums will require knowledge of the present and foretelling of the future.

Where is the problem?

The semiarid rural area of the Paraguaná Peninsula attracts a large influx of tourists, who mainly visit for the regions beaches. The small town of Cerro Peon was selected as a pilot population from within Paraguana, to undertake a self-help housing project using sustainable local materials and technology. However after the completion of the self help project the group's ability and attitude were not considered appropriate, as only 27% of participants had a level that would ensure the sustainability of the project.

This thesis will aim to target and select the participants of the self help project more accurately in order to achieve improved results in the changes of attitude and aptitude. The thesis aims to select a homogeneous group who have common interests, ambitions and abilities that will aid them in making collective decisions and enable the self help project to become sustainable in the future.

The thesis will assess whether additional education on sustainable development is appropriate to supplement the training process.

Non formal education

Non formal education will contribute significantly to the achievement of the goals of sustainability due to the fact that the formal education system cannot cope with the education problems found in the rural sector. Non formal education is relevant to the community as it provides the incentive and methods for self development regardless of the person's profession, age and place of residence.

Fordham (1993) suggested that non formal education focused on specific and defined disadvantaged groups, with the program being flexible in methods while having a clearly defined goal.

Prosser and Ahmed (1973) define non formal education as being any organised educational activity outside the established formal system that has identifiable learning objectives. The self help training is administered by the Universities however it is hoped that the education will allow the communities to take ownership of their development.

Fordham (1993) suggests that the non formal education should be designed to focus on the interests of the learners and that the curriculum planning should be bottom up, i.e. undertaken by the learners themselves. It is also argued that this will empower learners to understand and if necessary change the social structure around them. The seminar on education will allow for the communities to recommend their own educational plan.

Fordham recommends that leaders of the campaign recruited should be known and held in good regard within the community. It can also be seen that in many non formal educational campaigns workers are paid, which in turn accords them some status.

Design of Non formal programmes

Simkins (1976) provides a framework that non formal educational systems should be built on. He suggests that the program should emphasize flexibility, localness and responsiveness, and should remain located within a curricula format.

Community Development Education

Increasing educational opportunity is seen as a major factor in achieving greater social equality, and expanding community participation is key to achieving educational objectives.

Community development is a social learning process which serves to empower individuals and involve them as citizens in collective activities aimed at social and economic development. Community competences and values are learnt through the application and occupational skills are learnt on the job. Through education individuals learn that others can be trusted and that networks and cooperation can provide positive benefits.

Formation of Social Capital

Field (2003) suggested that relationships matter and that social networks are a valuable asset. Interaction enables communities to commit themselves to each other and a sense of belonging and trust can bring great benefits to social networks.

Beem (1999) highlighted that the concept of social capital contends that building or rebuilding community and trust requires face to face encounters. This will be encouraged through the educational program.

The World Bank considers Social Capital to be a useful organizing tool. They argue that 'increasing evidence shows that social cohesion is critical for societies to prosper

economically and for development to be sustainable', The World Bank 1999. Evidence suggests that education is more effective when communities take an active interest in the education provided.

Research suggests that where trust and networks are built and allowed to flourish, individuals and communities can prosper economically.

Participation, inclusion and local well being are all factors that should be considered within the educational framework. The informal education that takes place in groups where people are encouraged to work together allow for dialogue and conversation. This strengthens the bonds of the communities and develops social capital and a sense of belonging.

By working across communities educational achievement can be enhanced and Robert Putnam argues that social capital provides informal educators with a powerful rationale for their activities, as it fosters commitment and encourages greater participation from community members. He suggests that the features of social organizations, such as trust and networks of engagement can substantially improve a society's efficiency in overcoming dilemmas of collective action. Social capital is an attribute of the social structure in which a person is embedded.

There is growing evidence that social capital contributes to sustainable economic development as bonds and ties are critical for the survival of traditional societies.

EUROLAN suggests that social capital should be recognized as key issues in rural development.

Social capital is a primary feature of socially organised communities and allows for the resolution of collective problems more easily. Education must encourage cooperation and provide opportunities to promote trust between members of the community.

Interdisciplinary Learning

By integrating a multitude of disciplines around a central theme, interdisciplinary learning can encourage critical thinking. It should combine different skills and methods used in different academic disciplines, to examine a central theme.

By incorporating Interdisciplinary learning in the curriculum the themes regarding sustainable development can be educated with more depth and relevance. By embedding sustainability themes within the curriculum will enable the community to become equipped with essential values and skills that will develop them throughout life.

The education should explore the ethical, theoretical and practical frameworks that will enable the personal, professional, organizational and community change needed to achieve sustainability.

Education for sustainability provides the opportunity to bring together different disciplines that can contribute to an understanding of sustainability and help to translate into terms which the local community can own and understand.

The interdisciplinary learning method will integrate a multitude of disciplines around a central theme i.e. sustainability. Education for sustainable development will encourage interdisciplinary learning as it engages with social, economical and environmental issues and can be used to bring depth, relevance and challenge to learning.

Education for sustainable development

ESD was first described by Chapter 36 of *Agenda 21*. This chapter identified four major issues to begin the work of ESD: (1) improve basic education, (2) reorient existing education to address sustainable development, (3) develop public understanding, awareness, and (4) training.

By encouraging the local community to address sustainability their indigenous traditions will embody the values and practices required for sustainable resource use. It is important to educate the skills and knowledge that contribute to the goals of a sustainable society.

Huckle suggests that the education should focus on equipping the individuals and the communities to live and act sustainably. It should develop their understanding of the

environment and highlight the social and economic issues that can benefit from sustainable development.

By promoting understanding and providing information the educational program should help the community to refocus on sustainable practices by empowering them in making informed choices.

Keys to success include greater interdisciplinary work and interaction with other key stakeholders that have interest in the Guacrecon area. Sustainability must be integrated into the curriculum. By working with the real problem faced by Guacrecon the community should develop a more thorough understanding of the concepts and skills needed for successful sustainable development.

The education program must challenge the communities thinking regarding their future and create activities that will build the self esteem of the local population. By highlighting the incentives that sustainable development can achieve in terms of increased wealth and living standards, this will enable the educational sustainable development program to be successful.

It is important to instil the belief that everybody's efforts will make a difference for their future. The education provided should encourage the members of the community to understand and assess their own values and those of the society they live in. The education should be customized for individual learners however Tilbury and Wortman

identified essential skills that should be incorporated within the education. These included the ability to envision a better future, and Critical thinking skills to encourage the community to examine their economic, environmental and social structures. Also the ability to promote partnerships and learning to work together

The self help project should identify the knowledge, issues, skills, perspectives and values that are central to sustainable development. Public participation processes that allow communities to develop locally relevant education programmes should be encouraged.

Training

The training provided should focus on a specific job function, providing the community with the accepted practices and skills to perform specific tasks. Practical skills must be taught to enable the community to continue to have a sustainable livelihood.

Objective

To assess whether the conditions of the self help housing project in Paraguana, Venezuela, are focused sufficiently on education and training in order to achieve sustainable development.

Specific objectives

1. Establish the most suitable location to implement the self help training.
2. Establish whether the educational and learning experiences undertaken in the self help project are appropriate to achieving sustainable development.
3. Establish whether the current participants of the self help project have the attitude and ability to gain the necessary educational skill set to achieve sustainable development.
4. Target and focus the selection of the participants for the self help project who possess the ability and attitude required to achieve sustainable development.
5. Recommend educational programs that would enable the self help project to achieve the sustainable development of the community.

-Seminars

-Brainstorming

-Development of Tourist Route

Chapter 3: Methodology

This thesis is focused on field research that will guide and recommend an educational program in order to achieve sustainable self-help housing. The current aim of the self help training is to educate the community in a semiarid region of Venezuela to learn to use the soil and mud for the manufacture of resistant blocks in order to construct self-help housing. The community must be educated in sustainability to value their environment by being educated in techniques to use renewable and non-renewable natural resources. The community should be educated in what causes the low durability of their existing houses in this geographic area, and will be trained into how to combat the problem of atmospheric corrosives. By educating the community in the many benefits offered by sustainable development the thesis hopes to encourage a real sustainable development for the community.

In order to achieve these objectives the following methods were designed:

- ✓ Analysis of the self help project in terms of educational content for sustainable development by Participant Observation
- ✓ Face to face Interviews
- ✓ Questionnaires A, B and C to address the study's objectives (Bell, 2005)
- ✓ Seminar on sustainable development with brainstorming
- ✓ Empowering the community to develop their own action plan
- ✓ Encourage the community to develop educational and creative tools.

Participant Observation

In addition to questionnaires and interviews, participant observation was also selected as a method of data collection in order to gain qualitative data. The observation took place within the self help training given to the Community of Guacrecon by the local Universities whose aim was to train the local community in the use of environmental friendly materials for the self construction of housing.

Prior to the self help training session the local participants had no previous experience in construction and building. The participant observer aimed to take on the role of a member of the community and attend the training course; this would enable an assessment of the educational methods used. As stated by Mcniff et al (2005: 118) participant observation can be difficult “Because you are at the centre of the action it is not always possible to observe yourself”. However, in this scenario, the objective was to analyse whether the self help project focused enough on educational content which would achieve sustainable development. Participant observation will provide conclusions into how effective the self help training is focused on education for sustainable development.

“Observational research methods can provide an understanding of what is happening in the encounter between a service provider and user, ... or a community” Darligton, Y and Scott, D (2002:74) This statement is accurate as participant observation provided the opportunity to observe and assess the relevance the training course had for the community, and enabled an assessment to be made on its ability to promote educational for sustainable development. One of the data observed during the course was the

absence of material provided to support the training, this de-motivated the group as at times they felt confused and had no support material to fall back on.

Like any other method of data collection, observation has its strengths and limitations. An advantage from the observation method was the fact that the actual observation took place at the same time as the activities of the training were happening. This enabled a highly accurate assessment to be made of the educational content *before, during and after* the training had taken place.

An outline observation *Before* the training course was the lack of financial support provided to the community members who partook in the course; this resulted in a low rate of participants. However it can be seen from documental evidence such as CORPOTULIPA that funding can be secured which could be used to pay participants.

A disadvantage of participant observation is that the observer controls what is recorded and brought to analysis. This can result in bias and inaccurate recorded data.

Mason (2002: 201) suggests that “The analysis of qualitative data is not an easy task”. Moreover, the analysis of the results in an observation is open to interpretation rather than factual evidence. An inner observation *During* the training course was that the sole focus was based on scientific training to combat the harsh environmental conditions, rather than being based on the community needs. As Bell (2003: 104) suggests “Ask yourself whether another researcher using your research instrument would be likely to get the same responses” On analyzing qualitative data there is no guarantee that another

researcher would obtain similar results so participant observation is open to interpretation.

Where practical the use of co-observers may provide a check on observation. This would enable more accurate conclusions to be drawn from the data set, i.e. are all observers seeing similar things and making similar sense of them?

An observation made *After* the training course as followed by Lacey (1976:65) “researchers remained clearly outside the group”. Observing from this perspective highlighted the fact that there was no educational method used to teach sustainable development initiatives. As a result, participants had no interest in acting as mentors as they did not understand the impact the training could have on the sustainability of their community.

As criteria for this method the UNESCO principles to evaluate ESD programs were used (Appendix 4)

The method of participant observation was used for data collection because it provides an opportunity to gain qualitative data in a naturalistic setting. By being involved with the community and participating directly with them it promoted a greater understanding of the sustainability problems. It was also a cost effective method of data collection and provided the opportunity to integrate and learn the community values.

“Observation can be a useful way of understanding the context of the phenomenon under investigation and working out what the important questions to be asked are”

Darlington, Y and Scott, D (2002:80)

Interviews

The interviews were unstructured interviews, addressing two audiences:

- ✓ Researchers of the university in Falcón, Venezuela (UNEFM and IUTAG), who are researching in the use of more durable forms of soils and mud for construction, in order to combat atmospheric corrosion
- ✓ Members and leaders of the local community in order to establish their attitude and aptitude for sustainable development in their community

The interviews along with the questionnaires would provide qualitative data that would enable the self help project to be evaluated in terms of its education and training content. By determining the opinions of the leaders of the self help course and the community who took part, this would enable relevant conclusions to be drawn regarding the educational value drawn from the self help course. It would also allow firm recommendations to be drawn in terms of the educational direction it should take.

“A major advantage of interviews is adaptability” Bell. Due to the fact that the ability and aptitude of the community members varied greatly interviews were important tools to gather information as they could be adapted to each individual member accordingly. By adapting the interviews in terms of the time taken to complete and encouraging personal interaction would ensure that accurate and relevant results could be drawn.

Another advantage of interviews according to Cohen (1976:136) is that they are useful as a means of studying a small number of subjects in depth, while a disadvantage is that they are difficult to implement spontaneously and require a large degree of planning. Questions should be prepared prior to the interview in order to gain relevant data and both parties need to agree a suitable place and time for the interview to occur in. “Even so, the interview can yield rich materials and can often put flesh on bones of questionnaire responses” Bell (2005:157).

Another advantage of interviews is that they can provide a rich source of data “Unstructured interviews centred round a topic may, and in skilled hands do, produce a wealth of valuable data” Bell (2005:161).

The main advantage of using unstructured interviews was the freedom to allow the respondents to talk about what is of central significance to them. However in order to obtain accurate and valid data the interviewer must not influence the interviewee’s responses by asking leading questions that may influence the outcome of the interview.

Interviews were used as they were cheap to administer and they would enable a real insight into the educational value drawn from the self help project.

Questionnaires

3 questionnaires were used in this study:

Questionnaire A

- ✓ Questionnaire A was designed to select a target group of homogeneous members from within Cerro Pelón who would participate in the Self Help Housing project. Selecting a homogeneous group would enable the sustainable development to be more successful as the members would have similar attitudes and abilities.

Questionnaire B

- ✓ Questionnaire B was designed as an open-ended questionnaire which would assess the attitude and ability of the target group who participated in the Self Help Program, this would enable an evaluation of the success of the training program and would highlight if targeting the group produced stronger results. This questionnaire was used in the first group assessment of Cerro Pelon which was validated by professionals from the UNEFM who specialise in construction, corrosion and statistics. The same questionnaire will be used on the second targeted group to enable comparisons to be drawn between the two group's ability and attitude.
- ✓ Questionnaire B was also used in this thesis to re-evaluate the same first group of Cerro Pelón 3 months after the first evaluation. This would verify the reliability of the results and enable more accurate comparisons to be drawn (Bell, 2005).
- ✓ Questionnaire B was used to evaluate the targeted homogeneous group before and after the self help training program and results were compared with the first Cerro Pelon group.

Questionnaire C

- ✓ Questionnaire C used both open and closed questions, which was administered to acquire the opinions of the target group in more detail. This questionnaire would

enable a highly detailed picture to be drawn up regarding the community's needs in terms of housing.

Advantages of selecting questionnaires as a method of quantitative research as stated by Bell (1999:119) are that they are a 'good way of collecting a certain type of information quickly and relatively cheaply'. However a disadvantage is that they can take a long time to design and analyse.

Another advantage is that information can be collected from large groups by being delivered and responded to in face to face. Ritchie et al (2002:28) suggests that "individuals might say things they would otherwise be reluctant to say", as questionnaires are confidential and offer anonymity they are a good way of obtaining open and truthful answers. This would be beneficial to the self help project in gaining real and relevant opinions.

The questionnaires included a balance of open and closed questions in order to gain the required information. For example, in questionnaire C to find out the communities aptitude towards the use of renewable energy, a closed question, such as "Do you agree to use traditional designs and materials to construct your house?" was considered most effective in gathering the quantitative data required.

By way of contrast, to find out why some of the respondents opt to use conventional materials, an open question was required. For example, in questionnaire B 'which building materials do you think could help to decrease the damage of walls and roofs in your house? ". This type of question is considerably more effective in gathering qualitative data and requires the participant to express their own opinion.

Another disadvantage of the use of questionnaires is that gaining access to the community could be difficult and that respondents must set aside the available time to complete the questionnaires.

There were two strategies used in order to increase the chance of gaining access:

The first was to make the questionnaires short, clear and precise so that they could be completed in a short space of time and without difficulty.

The second strategy was to pass the questionnaires to a leader of the community so that they could administer and pass them on to the relevant members. This enabled the questionnaires to be returned promptly and at a low expense. "Colleagues and friends may be persuaded to lend a hand" Judith Bell (2005:148). This would help to increase the chance of a better response rate.

A Seminar on Sustainable Development with brainstorming

The designing of a seminar regarding sustainable development was necessary as it would educate the local community in sustainability and create an enthusiasm for the self help project. The seminar aimed to build commitment from the participants and highlight what could be achieved by aiming future developments towards a sustainable goal. An open invitation was given to community members from Cerro Pelón. A group consisting of couples who were living with their parents came from Guacrecon (a small community from with Cerro Pelon) and participated in this seminar. A brainstorming session took place within the seminar to enable an accurate assessment regarding the community's needs and interests (photos in figure 6).



Figure 6: Seminar and brainstorm with community members from Guacrecon (small community within Cerro Pelon)

The purpose of the seminars was to educate the community regarding sustainable development. By focusing on the benefits that sustainable development can offer the community's attitude towards the self help project would be greatly improved.

The brainstorming was used to gather the thoughts, ideas and opinions of the community. Without this knowledge it would be difficult to identify the main needs, problems and priorities that the community has and that the self help project must take into account.

Educating the community on sustainable development is fundamental for the success of the self help project. By offering feedback and brainstorming sessions the education could be improved to ensure that the community gained the skills required to enable them to achieve sustainable development.

Review of Literature

Documents regarding the various political laws and incentives were reviewed in order to justify the tourist approach. The documents would also highlight whether any grants were available that the community could use to help build their sustainable community.

As Cerro Pelón is very sparsely populated it was necessary to ensure that the Self Help Training program and seminars focused on a homogeneous group. This would ensure that all the participants would have a similar aptitude and ability and would create more cohesion between the group members. As Cerro Pelón has very diverse members whose abilities and aptitude would differ greatly this could create problems in assessing the success of the Self Help scheme.

Questionnaire A and interviews were established in order to select a target group for the self help scheme and establish where the participants in the community councils came from. A community council consists of units of people organized into groups within the community; Cerro Pelon contains 5 community councils. The community councils allow the community to make more accurate and relevant decisions regarding projects that suit their needs best. By assessing their needs as a community they are able to use government contributions more productively. For this study of Cerro Pelón it was important to gather information regarding the members of the first group and from which part of the community they came from. The five communal councils are: Guacrecon, White flowers, Violets, Santa Barbara, and SanJosé-JosefaCamejo, (figure 6 “first group”). The communal councils are new form of organizations within the communities whose aim is to help strengthen growth, create progress, improve integration and organization, and oversee the functioning of the local community. The organizations are setup in accordance with the provisions of the Constitution of the

Bolivarian Republic of Venezuela, which aims for the development of a full participatory democracy. (Autonomous Service National Fund of the communal councils (Safonacc, 2006)

Working with the heterogeneous community would create many inaccuracies from the study. This is due to the distance between family houses and the various different types of available land for development. These factors would not allow the joint construction of housing. This thesis commenced by passing a small sample survey (questionnaire A) to the members of Cerro Pelón who had participated in the first group study (1st phase of the self help project), in order to establish which community council they belonged to, their availability for future activities and whether they would agree to contribute to the training of others.

Figure 7 below illustrates the targeting of the group from Cerro Pelón. Segmenting the community further into a targeted audience would enable the questionnaires and interviews to have a more accurate response. This figure represents how villages in Venezuela are grouped into communal councils.

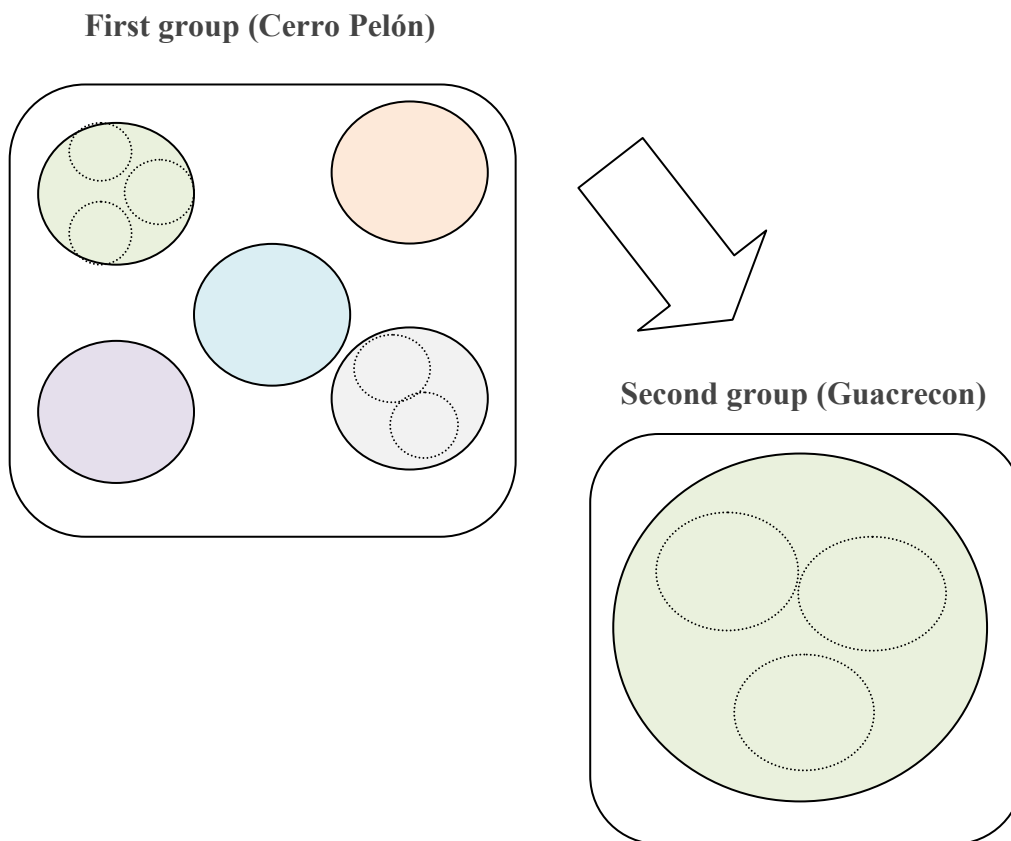


Figure 7: Diagram shows how a homogeneous group was selected from the heterogeneous group from the town of Cerro Pelón

Note: Guacrecon (circle green) is a communal council made up of three parishes (Guanábana, Crema y Conejalito),

The population this thesis focused on is a subgroup of heterogeneous group Cerro Pelón. The subgroup is consists of homogeneous members who all come from Guacrecon.

The first group of heterogeneous members was made up of 18 heads of families from Cerro Pelón, this is 10% of the 180 families within this town.

On the criteria that a little over 50% (10 of 18 persons) had medium performance and those with a high performance (4 of 5 persons) from the first group of the self help

training process came from a specific sector of Cerro Pelón “Community council Guacrecon” (circle green in figure 7). It was decided to work with this group to ensure greater integration in future processes involving not only training seminars and workshops, but also they had the necessary skill level to enable the transferable skills gained from the self-help housing project to be passed on, therefore sustaining the development of the community. It was decided that four people who participated in the first training would act as facilitators for the second group of workshops, where there would be a more rigorous evaluation of the materials in the area to ensure greater strength and durability of the future housing constructions.

“Guacrecon” is made up of 45 families, the second group was composed of 15 families (1/3 from the sector involved) plus 4 people from the 1st group, who acted as facilitators in the formation process during this study. The second group were interviewed with questions related to the type of housing needs that inspire and interest them, and also in questions that would build up a picture to find out the relevance of creating a tourist approach to the construction of new houses.

The survey and interviews were undertaken before and after the Self Help Seminars. This would help to establish the effectiveness of the training provided and would allow for critical feedback on areas of the training that could be improved and needed more focus on. The members of the community “Guacrecon” who were interested in participating were aged between 20 and 40 and all were couples who currently live with their parents. The seminars would encourage the community to share their experiences for mutual enrichment of knowledge. Members of the community are interviewed in the accompanying video, which highlights why a tourism approach to housing construction has been adopted in the community of Cerro Pelón.

The Self Help seminars aim to provide educational support and advocacy for the future activities of the local community in order for them to pass on their knowledge to other members of the community, to help create sustainable development. This education would also enable them to pass their knowledge to other communities living in similar conditions.

Questionnaire C was undertaken to acquire the Communities interest in Self Help Housing construction. It also will establish if the members of Guacrecon would be prepared to use their houses for tourism to aid the sustainable development of this area of Paraguaná.

The questions asked enabled open answers which were used to assess the changes in aptitude and attitude. The responses considered "good" were the most complete, "fair" meant knowledge or willingness to approach the medium and "bad" meant no knowledge or their willingness to change was zero.

Finally the study will compare changes in attitude and aptitude between the two groups of the population after the Self Help Training had taken place.

The internal reliability according to Goetz and LeCompte (1988) cited by Garcia, 2002 is to know the congruence between the learning inferences derived from these constructs produced by the appraisal on learning, which is essential for the description and composition of events regardless of their frequency. The thesis used techniques and instruments such as "multiple reviewers". These teams of reviewers were researchers in the areas of project and construction corrosion caused by environmental factors, and would facilitate and train the groups in the self help housing project.

With support from the audiovisual department, community members familiar with places of interest were filmed. The intention is to justify that the population of Cerro Pelón is strategically located from the standpoint of a lower atmospheric corrosion rate implying greater durability (Prato, 1995), and also within the proximity to many attractions.

The city of Coro was chosen as a starting point for the tourist route, which translates as the 'city of clay'. Coro's historical monuments have been declared World Heritage by UNESCO.

Finally the evaluation of documents regarding tourist operations would enable conclusions to be drawn on whether a tourist approach to housing was possible. These documents came from institutions of Venezuela government, foundations and other organization such as CORPOTULIPA, MINTUR, FUNDES and UNESCO. Also legal documents such as Law Organic for Tourism, Law of Communal Councils, Criteria for sustainable tourism, Law of Creating the Free Zone Scheme for the Promotion of Tourism Investment in Falcon State Paraguaná Peninsula.

Table 2: Operation of variables box

Dependent variable	Independent variable Quantitative	Independent variable Qualitative	Indicators	Techniques of data collection	instruments
Relevance of the touristic approach to housing	Homogeneity of the community	-----	% Members belonging to the same community council	interview	Questionnaire A item 1
	Positive change in attitude	-----	% Change good response after training	interview	Questionnaire B items 3, 4
	Positive change of fitness	-----	% Change good answer after training	interview	Questionnaire B items 5, 6
	Positive value to resources and environment	-----	% interviewers with answer "yes"	interview	Questionnaire C items 4,5,8,9,16,17
	Ability to organize and tourism decision on	-----	% interviewers with answer "yes"	interview	Questionnaire C items 10,11,14,15
	-----	tourist circuit		Observation unstructured interviews Record	Tape-recording interview
	-----	Programs and laws about government incentives in tourism		Documental Research	documents

Chapter 4: Findings

Results regarding the most suitable location to implement the Self Help project

The Paraguaná Peninsula has a total surface area of 3,405 km², stretching 60 kilometres from north to south and 54 kilometres east to west. It has a coastal stretch of 300 kilometres which is bound by the Caribbean Sea. Being part of the Falcon state, the Paraguaná Peninsula has ecological characteristics between a desert climate and a humid climate. Paraguaná receives low annual precipitation and its climate is classified as being a semi-arid and arid climate. The region's population and buildings are highly vulnerable to climate change. It is a region that has very different characteristics compared to those of Venezuela, and the harsh conditions in the Peninsula ensure that the economic, historical, cultural and social aspects of the region are not as enriched as the rest of Venezuela. The area has many xerophytic organisms like the cacti and other similar plants which are able to survive in the very dry environment and soil which is almost completely dry. Paraguaná's geographical location in Venezuela and in the world is illustrated in figures 8 and 9.



Figure 8: The political and territorial division of Falcon state showing the Paraguaná municipalities. Source: Gobierno de Venezuela (2009)



Figure 9: Location of Venezuela in the world. Source: Wikipedia (2009)

Paraguaná has three clearly defined territories (municipalities), consisted of Carirubana, Los Taques and Falcon, all of which have very different characteristics in their social and economic development. This study focuses on the small village of Cerro Pelon (situated within the town of “El Vínculo”) which is located in the municipality of Falcon. This municipality is the poorest within the region.

Cerro Pelón's location is displayed in the map of the Paraguaná Peninsula in Figure 10.



Figure 10: Map of Paraguaná Peninsula highlighting Cerro Pelon. Gobierno de Venezuela (2009)

The Municipalities within the Peninsula have many contrasts: in the West the Municipality of Carirubana has very important commercial and tourist industries. The world's largest oil refinery is located here and many duty free shops and hotels have an important part to play in the Venezuelan economy. With the discovery of the largest gas field in the world on the Peninsulas coast (Gulf of Venezuela) this Municipality will see its economy expand and prosper. This is in deep contrast to the Municipality of Falcon; located in the North East sector of the Peninsula. This Municipality has the largest geographical area and the population is marginalized. The level of atmospheric corrosion is very high on the coast and is catalogued as one of the highest in the world (Morcillo, 1999) (Prato, 1999, 2004). The largest coastal hotel in the Peninsula was built here but has suffered extreme degradation from the effects of the atmospheric corrosion. Below in Table 3 is data taken from the projected growth of the Falcón state (INE, 2001) which highlights the projected growth of the population in Paraguaná.

Table 3: Data on the projected growth of population in Paraguaná

Year/ Municipality	2003	2004	2005	2006	2007	2008
Carirubana	225,273	230,293	235,314	240,400	245,522	250,673
Falcón	44,943	45,857	46,769	47,691	48,615	49,542
Los Taques	31,576	32,280	32,985	33,698	34,417	35,139

Source: Information taken from the Projection box Falcón State Populations National Statistics Institute (INE) Falcon - Census 2001 Table P5.

This geographic area (Municipality of Falcon) is very popular among tourists, as the coastal region has large beaches which are suitable for various wind sports and also relaxing. The area also has other interesting sites relating to the history of Venezuela. However due to the highly corrosive atmosphere many of the hotels and local housing

have suffered severe corrosion so tourists have nowhere to stay. The case of the Dune Caribbean resort which had to be abandoned because of the constant and expensive maintenance required that resulted from the high levels of atmospheric corrosion. Figure 3 shows the state of deterioration of the resort after only being in operation for 5 years. This creates an opportunity for future constructions of houses and hotels to be aimed at accommodating tourists. So the un-sustainability of the current houses has created an opportunity for the local community of Cerro Pelón. As Cerro Pelón is located near to the popular beaches and attractions, by using nonconventional materials to construct future houses and hotels, Cerro Pelón should be able to combat the harsh climate and capitalise on the thriving tourist industry; creating a sustainable economy and creating jobs.

A study of climate change in Latin America and the Caribbean (LAC) published by the United Nations Program for Environment (UNEP, 2004) states that countries which may be more vulnerable to hydro meteorological phenomena are probably those coasts in the Caribbean Basin. The arid and semi-arid areas are vulnerable to changes in weather patterns. Figure 2 shows the behaviour of the climatic factor of wind direction and speed for 17 May 2009, it highlights the constant wind speed of 16 knots within the semi arid area under study. The particles of sand carried in the wind causes erosion, due to the salt particles pounding against building walls. (Prato, 1984)

Cerro Pelón was chosen for this study because it is located within the Municipalities that have also been defined by the National Government of Venezuela as being a Tourist Interest Area (ZIT, 2009) The Government has chosen this Municipality to concentrate aid and resources based on many factors.

These include the characteristics and natural physical conditions, environmental constraints, potential of the area, existing activities and the perceived benefits and opportunities of improving the areas image.

Chapter 5: Findings

Establish whether the educational and learning experiences undertaken in the self help project are appropriate to achieving sustainable development

The self help training program undertaken by the Universities focused on training a local group of people in the use of new materials for building. The objectives of the project were to provide the local community with the knowledge and skills necessary to construct housing which would withstand the harsh environmental conditions.

The teachers of the project were experienced members of the Universities who were experts in the scientific applications of raw materials. However they were not experts in education for sustainable development.

The quality of screening participants was not evident. The participants of the self help project were chosen using a simple method of first come first served. The Universities visited the area and spoke to local people about the potential for funding new buildings in the area and invited them to attend a training course.

No educational support material was provided, i.e. no workbooks, power points, documental support. The availability of equipment was limited and conditions for study were not motivational.

There was no social support offered to the trainees, they were not paid to complete the training. The number of participants from the community was not adequate for

sustainable development to be achieved. An option may be to secure funding which can then be used to pay volunteers, the job will accord them status and the hope that the development may lead to a full time job may attract other members of the community to participate.

The sustainability of the project is high as there are additional funds and sources of financing that can be utilised. Grants are available that will help the project to continue. Local authorities and departments of education can be utilised.

The self help program contained learning processes that are appropriate for educational for sustainability. The program sought to collaborate and form partnerships between the local communities, however the education provided did not focus enough on their needs and perspectives. Instead the self help project trained with a scientific focus on the actual needs of the environment not from the perspective of the needs of the community. This must be addressed to instil real ownership of the project to the community and would help to build enthusiasm and increase motivation. The scientific application lessons encourage innovation however they do not allow for the community members to be creative as the training given was too formulaic.

The self help project contained no seminars on the importance of sustainable development and used no educational methods that would provide incentives. Also there was no desire to create permanent mentors from within the community, this factor would play a major role in the success of the sustainability of the project. By promoting

the achievement of others in the community it would help to set goals that other members could achieve from the education.

It can be seen that non formal education will have a large part to play in the success of the self help training. The community of Guacrecon are disadvantaged while the education program itself has a clearly defined goal, that of sustainability and progress. However it is clear that the educational program implemented will have to be flexible in methods to ensure that it is tailored to the ability, attitude and needs of the community members. Its flexibility will ensure the success of the educational program. A main incentive that should be built into the education is the hope that the development could lead to jobs and economic improvements.

For the communities of Guacrecon non formal education will play a vital role in achieving the desired development of their surroundings. The educational ability and background of all the members of the community will vary enormously, ranging from the illiterate to University taught professors. As Venezuela is a developing country this wide range of ability or lack of must be considered in the design of the educational program. The self help project overestimated the educational ability of the participants in the design of the program which may alienate and actually deter some members of the community to participate in the self help scheme

The education should focus on improving the quality of the community's life and the new approaches to education should also focus on the basic education for those who have been largely neglected, the rural poor as suggested by Coles 1987:37.

It is important to give the community of Guacrecon a genuine sense of ownership, this will enable them to be enthusiastic enough to drive through the necessary changes in creating a sustainable future.

Huckle & Sterling, 1996 in *Education for Sustainability* suggests that an integrative principle between education, learning and sustainability exists. To achieve this integration it is important to enhance and build self developing and self reliant skills. Educational values such as empowerment, critical thinking, participation and self worth must be learnt and instilled in order to build a sustainable society.

The self help project must develop the community to become aware of their problems and educated into methods of how to combat them. By instilling the competencies required, and building their attitude and values this will enable them to be effectively involved in sustainable development. The competencies will only be acquired through action and the community must be shown methods in applying the new skills. The education must enable the community to integrate environmental and economic decision making.

The education and learning that takes place must be rooted in the local context and based on the needs and aspirations of the community. By focusing on the needs of the community this will create opportunities to empower them and help to promote and facilitate education for sustainable development. In turn the communities will achieve improved conditions in their economic, social and environmental surroundings.

The education should provide recognisable and measurable learning outcomes that can be achieved by the community. This will help to promote the achievement of goals and instil self value and worth among the participants.

The objectives of the education should equip community members with the skills necessary for them to become mentors so that they can facilitate training future participants. There should be considerable effort to recruit members of the community who are held in good regard within the locality.

In order to promote creativity and allow greater control over the project to community members the education should promote the development of training material. By holding a brainstorming session the self help project can allow the community members to take ownership of the educational material that can be used for future sustainable lessons. This method agrees with Fordham (1993) in that the education provided should be in the interests of the learners and that planning should be 'bottom up'. Encouraging the community to create a tourist video will help to enforce the idea of sustainability and highlight the benefits to their environment and economy that tourism will bring. The creation of the video will help to bring interdisciplinary learning into the education and help to bring relevance, depth and challenge to the self help project.

Social capital as stated by Hanifan (1916) as 'those tangible substances that count for most in the daily lives of people' can be used by encouraging the community to bond together and increase the feeling of goodwill and fellowship between them. The World

The World Bank (1999) argues that social capital is a useful organizing tool that will allow societies to prosper economically and for the development to be sustainable.

Field (2003) suggests that the central thesis of social capital theory is that relationships matter. By encouraging the community members to commit themselves to the self help project and providing education that enables them to interact with one another a sense of belonging will bring great benefits to the people. Community development education will enable the empowerment of individuals and help to build values and involve them in collective activities that will improve their economic development.

Findings

Results regarding changes in the attitude and ability of the self help group

Questionnaire B was administered to the first group of Cerro Pelon at the end of the self help training program. Participants of this first group were also asked to repeat the questionnaire three months later in order to assess whether there were any changes in their interest and understanding of the need for program focusing on sustainable development.

However as there was no positive changes in their interest, ability or aptitude it was decided that to continue the self help program with these particular members of the heterogeneous group of Cerro Pelon would not be productive. The self help training program would not achieve the desired sustainable development as these participants would not gain the transferable skills needed to educate future members of the community. The heterogeneous group consisted of members who had very different needs, abilities, interests and levels of education. These participants came from various parts of Cerro Pelon and each area varies in terms of type of land, housing structures, state of corrosion, the amount of people living in the community and availability of natural resources. These factors ensured that the heterogeneous group all had different needs and ensured that the self help training program would not be successful with these varying members.

In order to achieve the sustainable development the community needed it was decided to focus on a homogenous group of participants to take part in the self help program. The results from Questionnaire B administered both times to the Cerro Pelon group highlighted that the members who achieved the desired change in ability and aptitude,

displaying the necessary skill levels and interest for the self help housing all came from the small community of Guacrecon.

Guacrecon is a small community within Cerro Pelon, and as it was a small area all the members of this community had similar aptitudes, abilities, needs and education levels. This group of homogenous members were selected to take part in the second self help training program, which aimed to achieve the results needed to enable the community to gain transferable skills from the educational program.

The second group incorporated four members from Guacrecon who had participated in the first Cerro Pelon self help project. These four members from the same community council acted as instructors who would offer support and guidance for the second self help project. This would enable the assessment of the instructor's skills and ensure that they were gaining transferable skills from the self help project, the results would also highlight whether the self help program was achieving a high level of education.

Questionnaire B was again administered to the Guacrecon group before and after the self help training program enabling the assessment of their changes in ability and aptitude. The results from the heterogeneous group of Cerro Pelon and the second group of homogenous members from Guacrecon could then be compared. This would highlight whether the method of targeting and selecting participants would achieve improved results, enabling an evaluation of the targeting program.

The second group from Guacrecon consisted of fifteen heads of family including the four members from the first group who acted as mentors. Questionnaire C was administered to highlight the participant's aspirations and housing requirements. The

results would also highlight whether they were interested in constructing tourist accommodation.

The evaluation of the questions was achieved through administering three grades, bad, good or fair. The open questions would enable an assessment of the changes in attitude and aptitude, it was taken into account the responses considered "good", the most positive results, "fair" meant knowledge or willingness to approach the medium and "bad" meant that no one had any knowledge or their willingness to change was zero. The results of Questionnaire B administered to the first and second group are shown in tables 6 and 7 below. Only the positive results were taken into account as these highlighted the necessary attributes needed for sustainable development.

Questionnaire B focused on:

- Participant's willingness to use unconventional building materials in construction. (The building materials readily available to improve their housing. Item 5)
- Participant's willingness to use their housing in order to accommodate tourists. (Item 6)

Table 6: Results from Questionnaire B

	1st group “Cerro Pelón”		2nd group “Guacrecon”			
	3 months after the training process	Percent of positive results	Before training	Percent of positive results	After training	Percent of positive results
Population included:	18 (10 from Guacrecon)		15		15	
Unconventional building materials	10	55	10	67	15	100
Housing for tourist accommodation	15	83	10	67	15	100

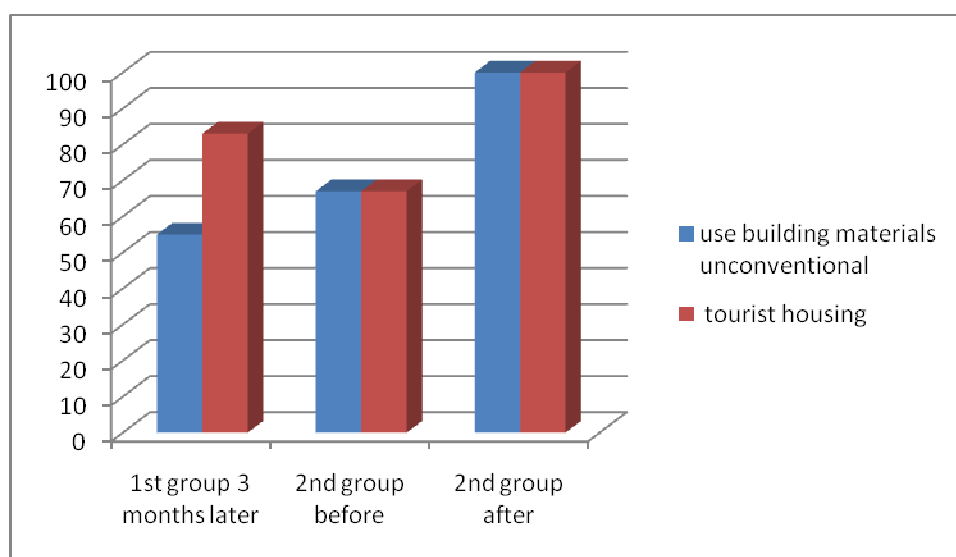


Figure 11: Comparison of changes in attitude after completion of the self help project between the first and second groups

The changes in aptitude were assessed using items 3 and 4 of questionnaire "B" in respect of:

- Damage that can occur to materials caused by the environment, (What climatic factors mostly impair your house? Item 5)
- Selecting materials to prevent damage (what building materials can reduce the deterioration of your home? Item 6)

Table 7: Questionnaire B regarding aptitude

	1st group "Cerro Pelón"		2nd group "Guacrecon"			
	3 months after the training process	Percent with good ability	Before training	Percent with good ability	After training	Percent with good ability
population included	18 (10 from Guacrecon)		15		15	
damage that can occur to materials in the environment	4	22	2	13	13	87
selecting materials to prevent their damage	4	22	0	0	12	80

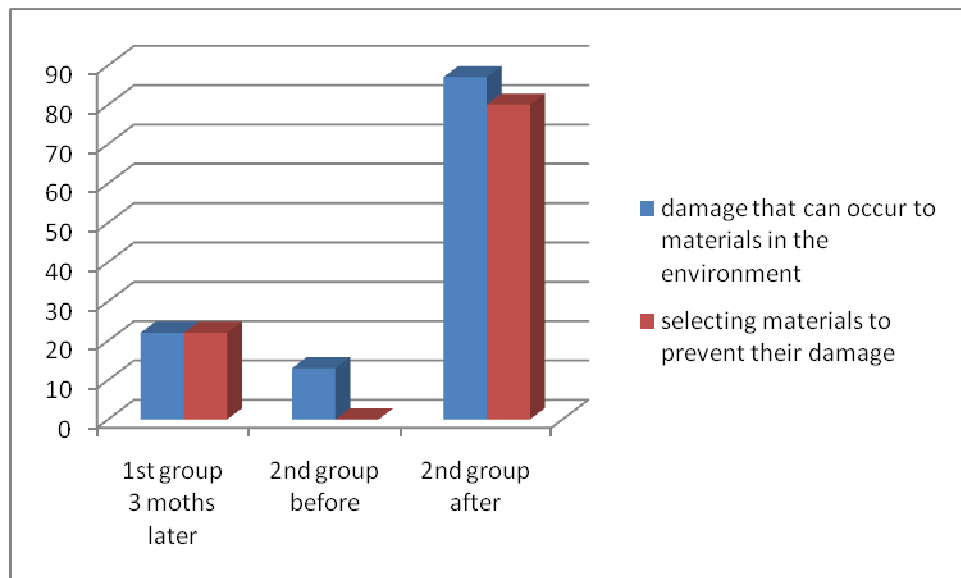


Figure 12: Comparison of changes in aptitude after completion of the self help project between the first and second groups

Regarding attitude of the first group the results indicated that only 10 of the 18 participants would like to use unconventional building materials, while 15 participants were interested in a housing project aimed at accommodating tourists.

The second group before the self help program showed that 10 out of 15 participants would like to use nonconventional materials and to use their housing for accommodating tourists. However after the self help program 100% of participants were interested in using nonconventional materials and accommodating tourists (15 out of 15). In respect to their ability only 4 of 18 from the first group knew about the damage of materials from the environment and the results were the same for the prevention of this damage. The second group before the training took place, only 2 were aware of how the environment damages their home, while no one knew how to prevent this damage. After the workshops had taken place results showed that 13 of the 15 participants had good knowledge regarding the damage that can occur to materials from the

environment, while 12 demonstrated sound knowledge regarding the selection of materials to prevent damage.

Comparison between the two group's attitude and ability

A comparison between the two group's ability and aptitude highlights a large degree of difference, and results show that the second group made up of homogenous members produced the stronger results.

Each community council consists of four main spokespersons chosen by themselves, who act as resource managers dealing with grants allocated by central government via a community bank. This allows the council to prioritize and address specific needs. In order to receive the grants the community develop projects that allow for the allocation of resources, such as the project of goats developed by the community council of Guacrecon. This project received around 50 million US Dollars (Bs 120 million) and was completed successfully. The self help project achieved the desired result of educating the community of Guacrecon. In return the council has requested funding to address the construction of houses. This funding will allow the self help program to be spread throughout Cerro Pelon and the new constructions will become a reality.

Questionnaire C

Questionnaire C focuses on aspects regarding the specifications of housing the community desired, how they valued materials and renewable energy, requirements in energy consumption, and whether the community were interested in accommodating tourists.

The following table demonstrates the education level of the members of the second group from Guacrecon.

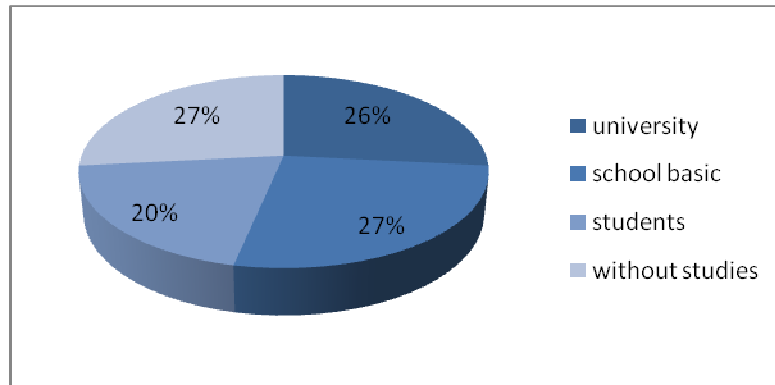


Figure 13: Education level of respondents

Age	number of respondents
21 -30 years	5
31 - 40 years	6
41 - 47 years	4

Table 8: Distribution of age of the second group

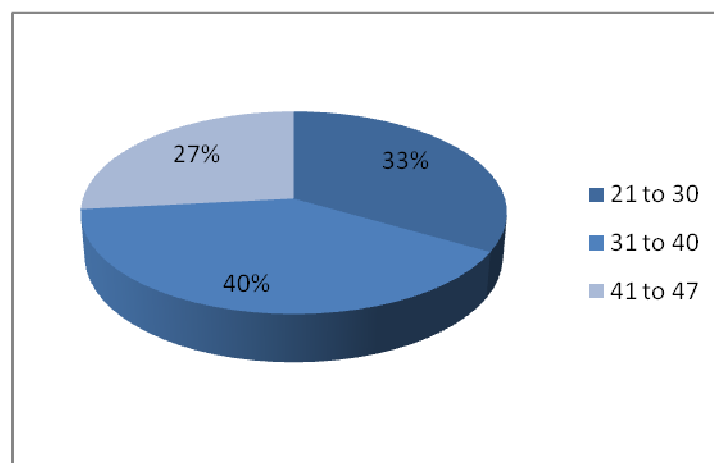


Figure 14: Distribution of age of the head of family in Guacrecon

The population in Guacrecon is young people, aged 21 to 42 years old, only one was 47.

The most are 30 to 40 years and they living with their parents occupying one bedroom

Table 9: Marital status of members of the second group

Status	number of respondents
Single partner	8
Married partner	6
Not answered	1

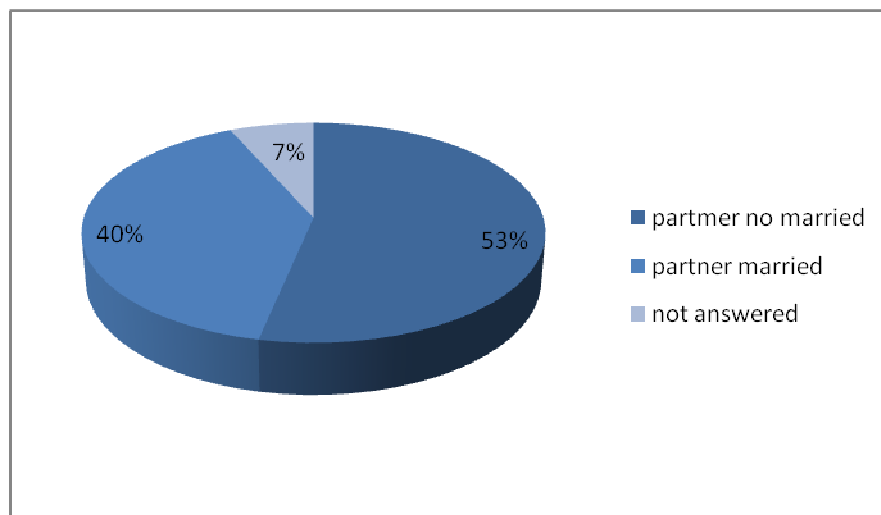


Figure 15: Status marital of the population in Guacrecon

Table 10: Number of members of the same family

N° members of the same family in parents home	number of respondents
6 members	2
5 members	2
4 members	5
3 members	3
1 members	2
Not answered	1

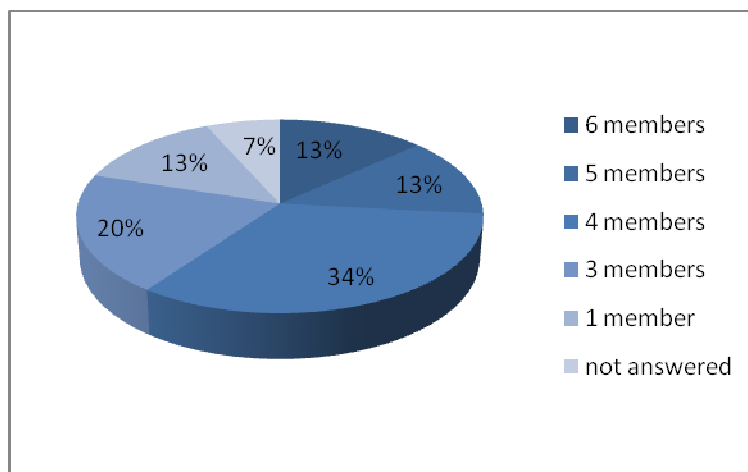


Figure 16: .Number of people in the same family.

The specifications of future houses the community desire

Table 11: Number of bedrooms they currently have and the number of bedrooms they need for their families (items 1, 2)

	N° bedrooms they have	N° of bedrooms they need						
		6	5	4	3	2	1	No answer
units	1	6	5	4	3	2	1	No answer
N° respondents	15	2	1	4	4	1	4	1

Table 11 highlights that all persons of Guacrecon surveyed are living with their families in one bedroom houses and 53% would like 3 or 4 bedrooms for their family. The self help housing program will construct houses which have a fixed number of rooms in order to keep costs low. Figure 17 shows the aspiration of community members for the number of bedrooms.

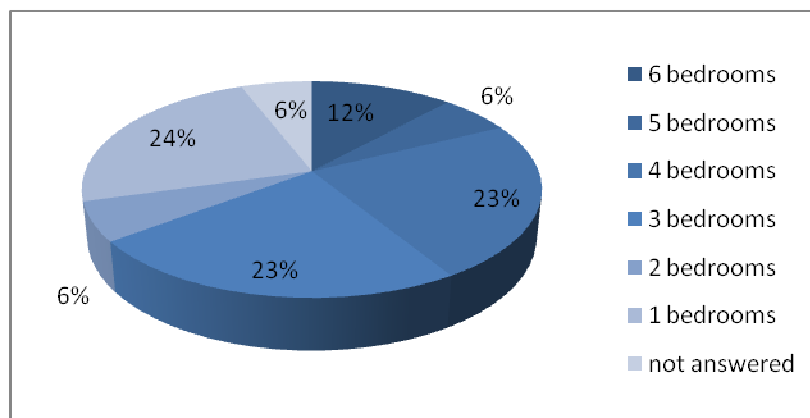


Figure 17: Number of bedrooms desired

Table 12: Preference regarding the construction of future houses (items 3, 4 and 5)

N° respondents		
Self construction	Use traditional design and materials	Use environmentally friendly materials
15	15	15

The results show that all members of the group agreed to use traditional design and environmentally friendly materials for the construction of their houses.

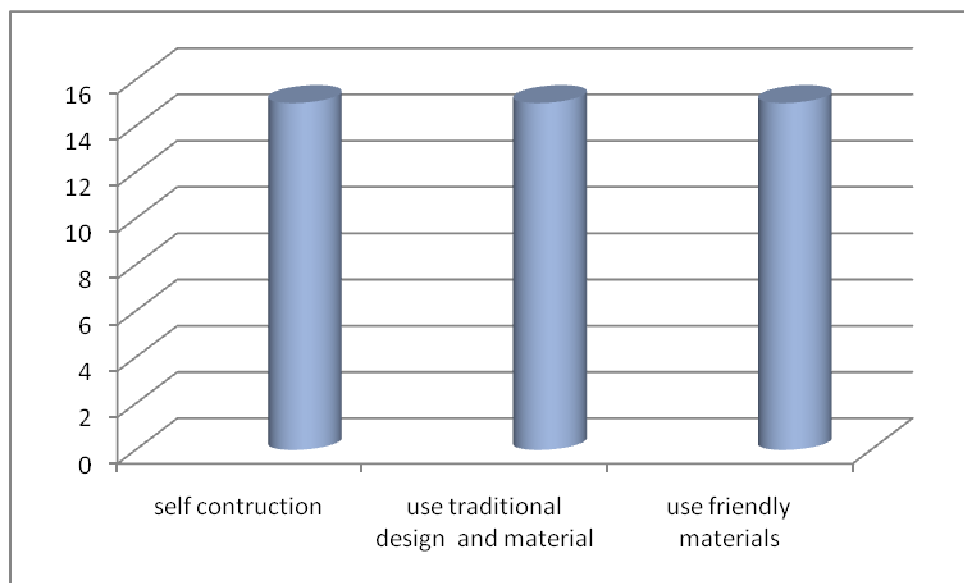


Figure 18: Preferences regarding the construction of their houses

Table 13: Energy requirements, Quantity and types electrical appliances (item 6)

Electric appliances				Each family	15 family
Kw/H average monthly	Quantity	N° respondents	Average appliance*	Average KW-H/mes*	
Lighting bulbs (fluorescent)	10	3	8 bulbs by families (120 W 5 h/d)	18	270
	8	2			
	6	4			
	5	1			
	No answer	4			
Refrigerator	1	15	1 refrigerator (290 W 14ft3 24h/d)	210	3150
Radio	1	15	1 radio (40W 4h/d)	8	120
TV	2	7	2 TV 19-21" color (70 W, 6 Hhd)	13	195
	1	8			
Condition air	2	4	Minisplit 1.5 ton 1680 W 8h/d 0 (because all people agree natural acclimatization)	403	0
	1	3			
	0	8			
Washing machine	1	15	1	13	195
Blender	1	15	1	2	30
Hairdryer	1	6	1600 W 10min/d	9	0
	0	9	0		
total					3960

* Striatum Energy 2010

The value and interest of renewable energy

Table 14: Preference of energy use (item 7)

N° respondents		
conventional	renewable	Mix (conventional+renewable)
0	3	12

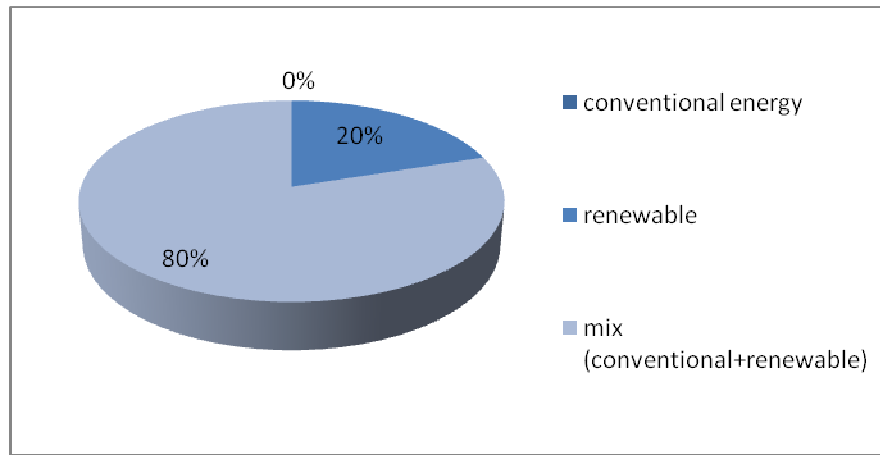


Figure 19: Preferences regarding type of energy

Table 15: Energy saving (item 8 and 9)

Number of respondents who agree	
Agree to use renewable energy (item 8)	Agree to use natural acclimatisation (item 9)
15	15

The tables 14 and 15 show that all respondents want to save energy and would prefer to use renewable energy, however 80% would like to have both types of energy to ensure that if the electricity fails there will be a back up.

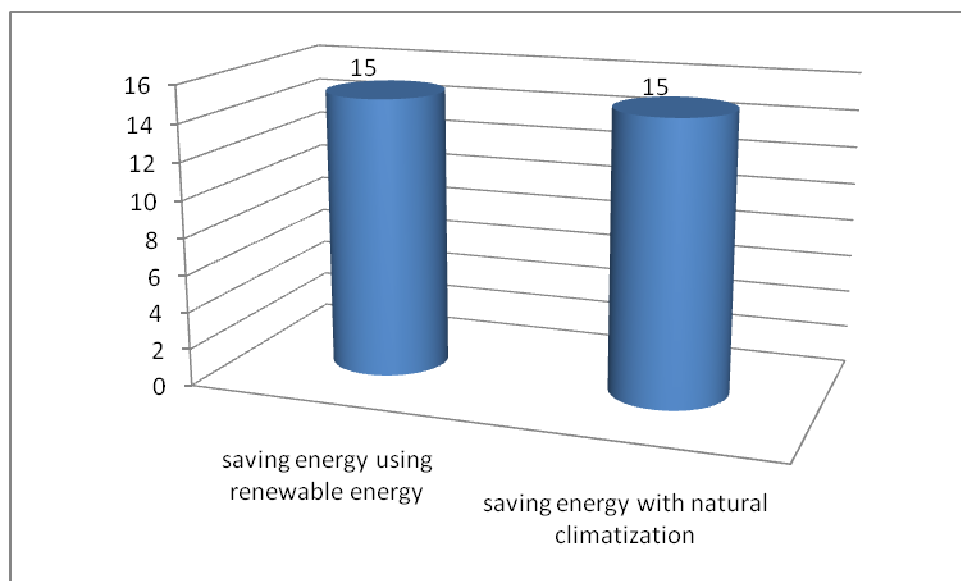


Figure 20: Respondents who are interested in saving energy

All respondents would like to avoid using air conditioning as this electrical appliance uses high energy and they would prefer natural acclimatization for their houses. This information can be seen in figure 20 above.

Table 16: Interest in specific activities

N° respondents			
Interest in joining a group that aids the development of your community (item 10)	The best activities for development of their community (item 11)		
	tourism	aloe and goats	craft
15	12	2	1

All respondents were willing to be join a group for the development of their community and 80% were interested in developing tourism.

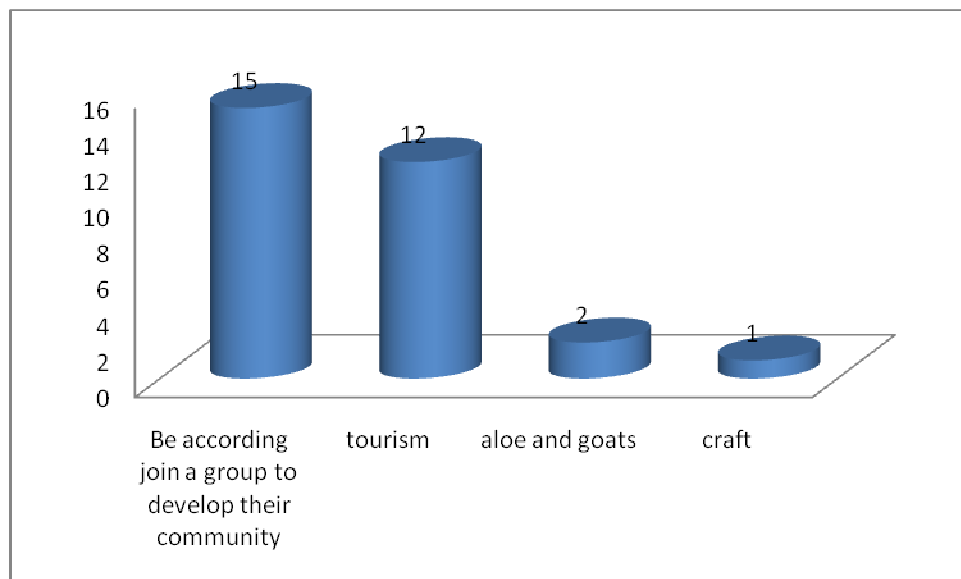


Figure 21: Respondents interested in specific activities

It can be seen that there is a high demand in developing tourist accommodation.

Table 17: Willing to use their house to host tourists (items 12 and 13)

Willing to use part of their house to host tourists		Number of rooms required to host tourists				
In house	Out house	N° bedrooms	4	3	2	1
0	15	N° respondents	1	4	6	4

This shows that 67% want 2 or 3 bedrooms for tourist purposes, so the housing should be constructed with this fact in mind.

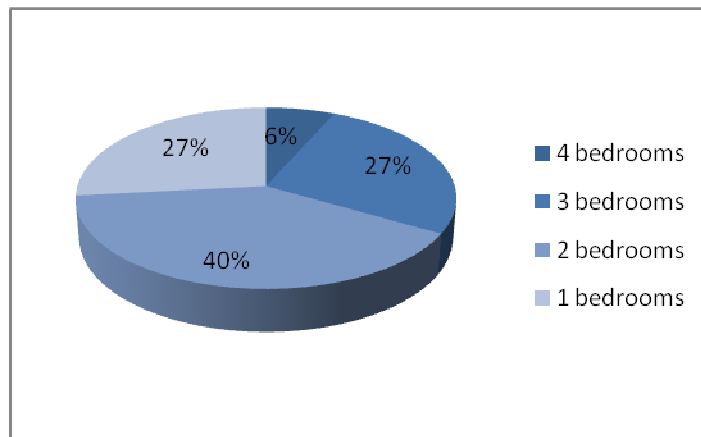


Figure 22: Number of bedrooms the population of Guacrecon would like to host tourists.

All respondents want to accommodate tourists but all outside the family home. Also 40% want 2 rooms for tourists and 27% wanted 3 bedrooms, then two models of tourist accommodation should be made, one with 2 bedrooms and another with 3 bedrooms.

This is shown in Figure 22 and Table 17.

Table 18: Interest in learning about the potential and how to promote tourism in their region (items 14, 15)

N° respondents	
Potential	Promotion
15	15

The table 18 shows that all respondents are interested to know the potential of their region to host tourists. All respondents are interested in learning aspects of promotion.

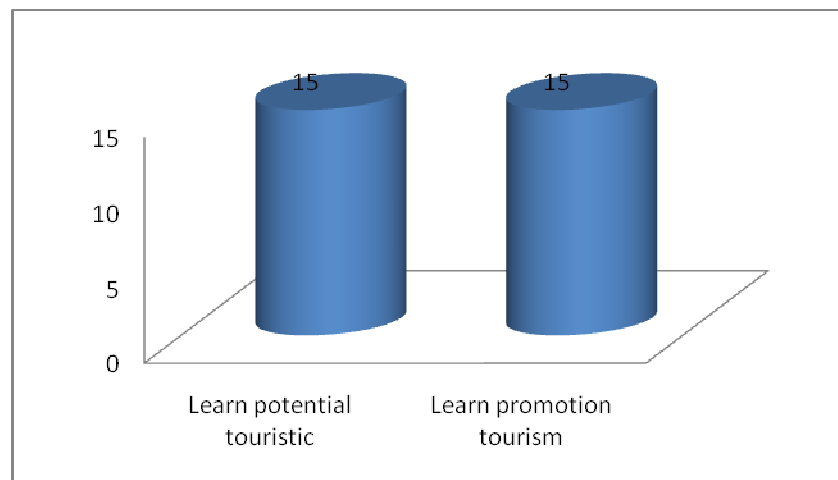


Figure 23: Population interested in the potential and promotion of tourism.

These results show that there is enough interest and demand in developing tourist accommodation. Guacrecon can take advantage of the incentives that the Government of Venezuela offers for the development of tourism.

Interest in Saving Water

Table 19: Water saving (items 16 and 17)

Number of respondent who agree		
Recycle water (item 16)	Use non-conventional toilet (item 17)	
	Agree	No answer
15	12	3

It was observed that the people of Guacrecon agree to reuse water, and the majority of respondents would like to use non conventional toilets in order to save water.

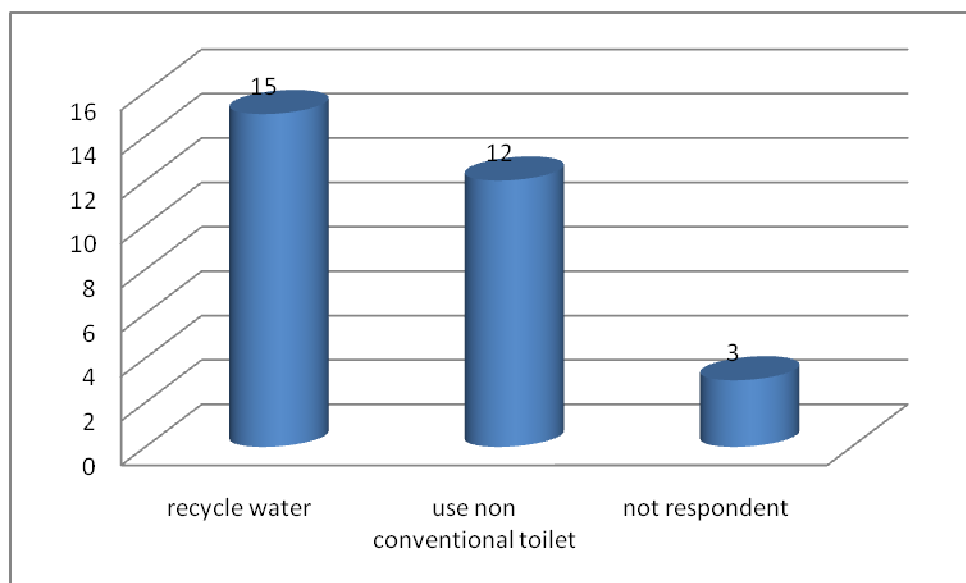


Figure 24: Respondents interest in saving water

The population of Guacrecon would be trained in how to recycle water. Methods include saving water when taking showers, washing dishes and how to save water when washing clothes.

The results show that it is viable to work with this population in developing and sustaining their community. The results also highlight the interest in tourism. This community could be used as a model for other communities in semiarid regions of Venezuela.

Findings

Target and focus the selection of participants (Questionnaire A)

Each Community Council has four main spokespersons and resource managers who are chosen by the community. Resources are granted by the central government through community banks. This community structure empowers them in being able to have the power of decision to directly address and prioritise their needs. The community is able to develop projects that allow the allocation of resources. An example can be seen in the production of Goats project which was undertaken by the community of Guacrecon; here the Government invested 55 million of US Dollars (Bs 120 millions). This project focused on the increased production of Goats which in turn led to the increased production of products derived from Goats, i.e. milk, cheese, leather and meat. This enabled the community to become more self sufficient and is evidence of successful sustainable development within that small community.

In Cerro Pelón (located in the municipality of Falcón) are five communal councils. The people who participated in the first training group were a mixture of all the five community councils. These communities are made up of many different people who all have very different educational backgrounds. This project was interested in targeting a smaller and more precise group who all had similar needs, aspirations, abilities and aptitudes (a homogeneous group). Questionnaire A was implemented in order to target this desired group and to establish where the people participating in the project came from. This would enable the new strategies to be addressed and raise the best results for future development.

At this moment all the communal councils have the decision regarding the new project that they consider the most important to develop and therefore which project to allocate the resources from central Government.

The results from Questionnaire A enabled the formation of a more targeted and selective group to be formed. The results highlighted that the community of Guacrecon would be the most successful targeted group. Four out the of the five successfully trained people from the Cerro Pelón group (1st group training) came from within the small community of Guacrecon; also these four people were willing to accept the role of instructor for future groups, this would enable sustainable development as the necessary skills needed for development would be passed on from within the community.

Chapter 6: Findings

The development of educational programs

The seminar that focused on education for sustainable development encouraged the community members to have a greater role in participation and so would be more engaging. By highlighting the problem faced to the community caused by the harsh environment it was hoped that they would discover a more creative solution in combating their problems. This seminar stepped away from the traditional model of teacher centred to become more learner centered, which in turn empowered the community to make their own decisions. This would also allow the community to take real ownership and responsibility for their future and also motivate them to carry the project through to completion.

By encouraging brainstorming and collaboration the community would provide the knowledge required to generate ideas. The main idea generated throughout the debates and that had the most support from the community members centered on the theme that tourism would play a vital role in the success of the sustained development.

Questionnaire C was administered to the community of Guacrecon to find out their level of interest in constructing tourist accommodation.

Questionnaire C relating to tourism:

100% of respondents were willing to join a group for the development of their community and 80% were willing to develop tourist accommodation (items 10 and 11).

The whole community were willing to use their house to host tourists (items 12 and 13) and 100% were willing to host tourists in outhouses. 67% of respondents desire 2 or 3 bedrooms to accommodate tourists.

100% of respondents are interested in finding out about the potential profitable aspects resulting from accommodating tourists and 100% of respondents were willing to promote their region as a tourist location (items 14 and 15).

These results highlight the community's enthusiasm and interest in developing their housing to accommodate tourists, the community is also interested in learning about the benefits their region could gain from tourism and are also interested in promoting their area.

The educational seminar helped to transfer the critical thinking skills required for sustainable development. The community members were keen to embrace the tourist accommodation and opted to construct a tourist route which could be used to assess the attractions and sights that would encourage tourists to visit the area.

This tourist route would be constructed through fieldwork and outdoor learning and help to link sustainable theory to real world examples. Palmer and Suggate, 1996 and Hope 1999 state that outdoor experience is an important precursor to understanding sustainability.

A tourist route was constructed in order to assess whether Cerro Pelon has attractions and sights which would encourage tourists to visit the area. With the aid and support of the local community a tourist route was filmed and developed which is highlighted in the accompanying video. This video can be used to educate future members of the community regarding tourist locations, and can also be used as a marketing tool aimed at promoting the local attractions for tourists. This tourist route can be seen to support the development of tourist accommodation.

Developing the Tourist Route

In order to research into the historical and local facts regarding the area of Cerro Pelon, it was necessary to contact and interview various members of the local community who have knowledge of the area. Members of the local community took control of the tourist route and directed and highlighted the local sights in order of importance. A first visit to the destinations was followed by a more detailed second visit in order to develop an accurate account of the mileage involved between each possible tourist attraction, presented in Figure 25. Subsequently the video that accompanies this work was filmed.



Figure 25: Tourist circuit designed around Cerro Pelon. The red line highlights the start of the journey, while the blue path shows the return journey.

Outward path:

Leaving the land where the homes will be built in Cerro Pelon town

- > **Cerro Pelón 5km → El Vínculo town**
- > **El Vínculo 4km → Cape San Francisco (constructed when JC Falcón government existed)**

- > **Cape San Francisco 5km → Saline Las Cumaraguas** (red colour caused by halobacterias) located in front of the **Médanos Caribe resort**
- > **Médanos Caribe resort 3km → Saline Palo Seco**
- > **Saline palo Seco 3km → Shrimp industries**
- > **Shrimp industries 3km → Beach “Playa langosta”**
- > **Beach “Playa langosta” 2km → Puerto Escondido**
- > **Puerto Escondido 15km → Cape “San Román”**

Return path:

Leaving the Cap “San Román”

- > **Cap San Román 29km → Cumaraguas**, taking the coast road
- > **Saline Las Cumaraguas 4km →** (return by coast) **Tiraya beach**
- > **Tiraya beach 5km → Boca de Caño wetland**
- > **Boca de Caño wetland 3km → El Supí beach**
- > **El Supí beach 1km → Buchaco beach**
- > **Buchaco beach 5km → Adícora beach** (route Pbo Nvo)
- > **Adícora beach 1km → El Hato**
- > **El Hato 9km → Pueblo Nuevo**
- > **Pueblo Nuevo 6km → House of Josefa Camejo** (Historical place)
- > **Cerro Pelón**

⊙ Total travel is 110 km, Journey time around 1 hour 30 minutes

By encouraging the community to develop the tourist route it enabled them to see the big picture regarding housing which could be sustainable. This method would link the teaching on sustainability in practical terms and show that real results were deliverable and operational. The community were encouraged to involve all their members of family to gain a real in depth knowledge of their surrounding area. This would also help to promote the sustainability issues and allow the education to be transferred to the whole community.

The development of the tourist route would also allow for creative thinking and show how to exploit their environment to gain economic benefits. It would also help to develop social partnerships as it is rooted in the local context and based on their needs and aspirations.

Developing the Tourist Video

The tourist video was created to be an educational tool that could be used in the future training of new members of the self help group. The development allowed the community to drive the process and choose locations that would be suitable. As it was rooted in local context it would help to educate other members of the community in cultural and religious contexts. It would also help the community to reflect on how far the sustainable project had come.

The tourist video is relevant to education for sustainable development as it encourages innovation and creativity while incorporating cultural values.

The video demonstrates directions to arrive in Cerro Pelón from leaving the city of Coro (capital of Falcon state). Total distance is 70 km which takes around 50 minutes. Several places of interest are highlighted along the route to Cerro Pelon where tourists can take in the sights offered by the small villages.

Video Content

- An explanation regarding the city of Coro, Los Médanos isthmus, Pueblo Nuevo town, El Hato town, the beaches to the Northeast of Paraguaná especially Adícora, and the various different types of vegetation and wildlife.
- Explanation of landscapes in the saline and wetlands highlighting various plant and animal species that live there.
- Images of historical houses and interviews with the native people regarding their beliefs and the music of their locality. The local people sung traditional songs and played their own instruments.

Included in the video are the interviews regarding the opinion of the community leaders of Cerro Pelón and the members of the communal council from Guacrecon. The interviews highlight the fact that the community are interested in allocating housing for accommodating tourists. The video also highlights their interest in achieving sustainable development for their community.

The video also contains interviews of the University professors from the Falcon state. These professors are researching into the use of nonconventional material for traditional housing in order to create constructions that are more resistant from corrosion. The professors interviewed are the instructors who gave seminars and workshops in order to

engage the people of the community and are seen demonstrating methods to select materials in order to develop sustainable housing.

Laws and organisations that promote the development of tourism in rural regions

Several documents that focus on the development of rural tourism in Cerro Pelon:

Law of Communal Councils

The organic law regarding community councils (National Assembly of Venezuela, 2006) in articles 2 and 3, demonstrate how communities decide in which projects to receive economic benefit from the Venezuelan state.

The resources for the operation of the communal councils are handled through the Powers of the Autonomous Service National Fund of the communal councils (Safonacc). Safonacc's main activity is to allocate resources to the communal councils, supporting the community in social and productive projects and aiding financial management. Figure 26 shows several members of the communal council of Guacrecon, photographed after the completion of the Self Help workshop.



Figure 26: Members of the Communal council of Guacreon.

CORPOTULIPA: Corporation for the Promotion of Tourism Investment in the Paraguana Peninsula

Corpotulipa, is an autonomous body under the Ministry of Finance of Venezuela, responsible for ensuring compliance with the Free Zone Act and implementing plans, programs and projects aimed at boosting the development of the Paraguana Peninsula. It was created to aid investment in promoting tourism in the Paraguaná Peninsula Falcon, and to help develop national and international tourism through increased investment in service providers of tourism. Contained in the document that justifies the creation of Corpotulipa, it states that Paraguana Peninsula currently lacks the infrastructure necessary either in quality or quantity to meet the possible demand for tourist services.

Corpotulipa (1999)

FUNDES

FUNDES promotes the competitive development of micro, small and medium-sized enterprises (MSMEs) in Latin America since 2006. In the document *Grow with your small Inn*, it reflects the experience to rely on an implementation of the "Grow your Posada" in 7 States of Venezuela. From the 7500 tourist service providers in this country, 39% are small family businesses dedicated to tourist housing. The program seeks to aid these MSMEs to achieve business development through various social and environmental activities. By participating in the program, the Inns have increased their rate of employment and improved their income and quality of living conditions for its owners and employees. FUNDES (2009).

The program "Grow with your Posada" aims at encouraging business development, through the social and environmental development of small tourism enterprises. This will contribute in improving the quality of tourism and aid the promotion of tourism in Venezuela. It is a program that is designed around the features and needs of the tourist inns (Posadas) in Venezuela. The program raises the overall development of tourist services by having an impact on the administrative, commercial and management services. The program was developed from two lines of action, the individual (both employer and company) and group (FUNDES, 2009).

A new vision drives the alliance established between FUNDES; COLFATUR and CORPOTULIPA, which operates under the Ministry of Popular Power for the Economy and Finance. This aims to foster the integration strategies in the state of Falcon between the social and tourist orientated planning services.

Jose Luis Naranjo the president of CORPOTULIPA, seeks to achieve excellence in service quality through the training of tourism providers in different areas of operational management. The training focuses on hotel accounting, tourist service, marketing and providing travel packages in order to promote a more productive tourist sector. Libia Berbesi, general manager of the Foundation for Sustainable Development in Latin America (FUNDES), stressed that the alliance formed by the three institutions last year continues to work for small entrepreneurs who are focused on tourism. (Mundara, 2009)

Another important contribution of this alliance aims to ensure that natural attractions and local cultural heritage are preserved. The self help housing project will ensure that local natural resources are used to construct the housing and tourist accommodation, and the tourist route will encourage tourists to visit the local natural and historical attractions.

Angulo (2006) cited by Reyes (2008) indicates that tourist facilities and accommodation must be designed by using local materials, and display characteristics of the local environment. The buildings must value traditional architectural structures in order to ensure that the local heritage is conserved. The self help housing project aims to conserve the traditions of the local community by ensuring that the new accommodation constructed uses traditional techniques and local natural materials.

With the support of the above programs it is possible to achieve the development of a sustainable community which will accommodate tourists and help build the economy for the community of Cerro Pelon.

Education surrounding the benefits of tourism must play a part as tourism will play a key role in the sustainability of the local area. A tourist accommodation project is important to this community as it would enable for the growth of social and economic factors and would utilise the incentives and grants available from the government of Venezuela (ZIT, 2009).

A key factor to the success of the sustainability of the housing developments is the need for accommodating tourists. By educating the local community in the benefits tourism can offer will help to instil the rewards that the development will afford the community. The education focused on building the skills and capacity of the population and promotes lifelong learning. By engaging the members of the self help project to focus on education and by fostering a partnership and participative approach, it was hoped that real ideas could be gained from the community which would empower them.

Recommendations for a self help education program delivering sustainable development

The education should focus on improving the quality of the community's life and the new approaches to education should also focus on the basic education for those who have been largely neglected, the rural poor as suggested by Coles 1987:37.

It is important to give the community of Guacrecon a genuine sense of ownership, this will enable them to be enthusiastic enough to drive through the necessary changes in creating a sustainable future.

The education undertaken in the self help scheme must encourage members of the community to cooperate. This cooperation, with each member doing their share will allow their problems to be resolved more easily.

The education should allow for the community members to bond with one another. By encouraging trust and constant interaction the self help scheme will see completion and allow for the future development of the community.

Networks must be built that allow for the flow of information. This information will facilitate the achievement of building new developments, by encouraging community members to share experiences and by educating each other sustainable development will be achieved.

By organising the education seminars into groups and facilitating strong members of the community to become mentors will ensure that social capital plays a part in increasing awareness of the sustainability issues. This education will allow for future generations to acquire the skills necessary to maintain and support future developments.

The education must be provided at regular intervals, i.e. 2 lessons per week. This will encourage enthusiasm and encourage members to become proactive and involved. This simple act of joining together regularly will create ties and promote better health and well being.

Members of the self help scheme who demonstrate strong aptitude and possess the relevant attitude must be chosen to act as community development practitioners. These practitioners will help to build relationships through the skills they have learnt in the educational program, they will empower individuals and encourage people to act together. By fostering social inclusion the development of the community will be sustainable.

There are key factors and objectives that the educational program must adhere to in order for the development to be sustainable. Members of the communities must feel that they have identified the changes that they want to achieve and encourage them to feel that they can make a difference. The education should support the communities in their visions and priorities for action. By agreeing with the community ways on how to assess their progress this will empower the individuals and help them to evaluate their own impact. The education must be user friendly and encourage communities to make plans

and build their own frameworks. The education must also be challenging and encourage methods of reflection.

By working and learning together the education can promote a collective process which enables participants to learn from reflecting on their experiences. By using the strengths of the community the education can bring about the desired changes.

Chapter 7: Conclusions

The self help project has enhanced social capital as the traditional and indigenous methods have been taken into account in the construction of the houses. It has inspired communities to protect their natural heritage. Through education the economy should grow. The improved skills and knowledge of the community should lead to the sustainable use of local materials available for construction. The high levels of participation will improve the confidence among community members and enable them to gain values in sustainable living.

Both UNEFM and IUTAG, want to help the poorest communities in Paraguaná to grow socially and economically by educating them in how to use local natural resources for building durable self-help houses with a tourist focus.

Currently there is inadequate tourist accommodation and the hotels and hostels that are there are corroded and underdeveloped. The highly corrosive atmosphere caused by constant high winds and high salt content erodes and destroys the buildings. Maintenance is expensive and development is unsustainable due to the high costs involved.

This thesis has highlighted the fact that by educating and training the local community in the construction of houses and hotels with an aim to accommodate tourists, a new sustainable development of Cerro Pelon can be achieved. However this sustainable development can only be achieved by the community themselves and this project demonstrates the importance of targeting the education at the correct members of the

community who have the necessary interest, ability, aptitude and motivation to drive the development through. By educating the community leaders in transferable skills, they will be empowered with the necessary skills enabling them to educate and train future members of the community. This sustainable development will lead the poor community to prosperity.

This dissertation highlights the importance of education for the achievement of sustainable development, and therefore contributes to the self-help housing project by demonstrating methods to target and focus the education in order to achieve reliable and valid results. This dissertation demonstrates that inadequate selection of participating members from the community for the self help program will not achieve the desired sustainable development. It is vital to select members of the community who have the capacity to assimilate information and pass it on successfully, enabling the development of the community to be sustainable. This would achieve the necessary scaling up required for sustainable development.

This dissertation also highlights the importance that tourism can play in ensuring that the development of the community is sustainable. Educating the community in the benefits offered by accommodating tourists will help to build a developed and sustainable community.

This Self Help program is suitable for other towns of Paraguaná and other coastal areas with a semi-arid climate. It can also be used as a template for other poor rural areas in Venezuela and other Caribbean countries, which are vulnerable to climate change.

Communities in which water and electricity are inadequate require education which focuses on recycling water and renewable energy. The self help curriculum can expand in order to accommodate future changes ensuring communities are educated with the knowledge they require. The education of groups of communities will enable them to achieve sustainable development.

The Guacrecon community contains members who have a certain degree of formal education, this allows them to understand their problems in this area and will enable them to gain skills through education. Guacrecon were interviewed regarding energy and water sustainability, and results showed that they had a real grasp on these important issues. For example all the members were interested in saving energy and would prefer to construct their houses in such a way to avoid the use of air conditioners.

By using natural materials and ensuring the architecture suits the environment the accommodation can be built to take advantage of natural acclimatization. The members of Guacrecon were also interested in the benefits offered by re-using water and all agreed to have non-conventional toilets in their new accommodation.

The thesis also demonstrates that other factors are important in order to achieve sustained development. Paraguana has vast supplies of natural resource material that can be used to construct sustainable buildings and it is also located in an area that is particularly suited to tourism. These factors will ensure that not only can the self help building program be implemented effectively in Paraguana but also the development of the area can be sustained for the future.

According to the results there are three aspects that make the tourist approach feasible. This is due to fact that there are many tourist attractions within the local area as showed in the accompany video. Another aspect is the fact that people want to take opportunities of study aimed at tourism as they can perceive the tourist potential of their local area, where beaches are the main attractions. There is also an incentive from the government at a national and regional level and from international programs that support this type of economical activity.

It is recommendable to keep working in the non-formal education as given to the community of Guacrecon because of the positive results in the increase of aptitude and attitude. It also coincides with the spanning of the United Nations decade of Education for the Sustainable Development (DESD) from 2005 to 2014. The DESD breaks down the traditional educational scheme and promotes interdisciplinary and holistic learning rather than subject-based learning, values-based learning, critical thinking rather than memorizing, multi-method approaches, participatory decision-making, locally relevant information, rather than national.

The self help program works according to DESD due to the presence of the interdisciplinary learning process. The apprentice received the experience from the teaching of different professionals from various areas of science. The participants also have critical thinking during the learning process as they are encouraged to share their experience regarding the use of traditional materials. The responsibility of the Universities focused on educating the communities to know and select their resources, to provide the knowledge relevant to increase the quality of their constructions and also show methods of identifying community problems.

Venezuela has adopted a Law of Communal Councils which encourage people from diverse populations to join together to achieve common goals. In the formation of these councils the geographical proximity and interests have to be taken into account. This will enable communities to build a cooperative, in which the government can provide economic help via community banks. This form of grouping communities together will allow the inhabitants to decide on which projects they want to spend on as a priority.

Based on the results obtained recommendations regarding the non-formal education process in rural areas of Venezuela can be made.

- ✓ Use the body of a Communal Council to select a group to work with due to the uniformity in their problems and their same interests
- ✓ Include in the training theme environmental issues relevant to sustainable development
- ✓ Use members of communities to work as facilitators for neighbouring community projects

- ✓ Training these type of communities and their inclusion in programs on tourism is a good option to escape poverty, as was the case in Nepal where other sources of income are very difficult and where tourism potential is high (Ministry of Finance Nepal and Asian Development Bank, 2006). The people of Guacrecon and Cerro Pelon are interested in receiving training for tourism
- ✓ Engaging the government through collaborative public awareness not only provides information but can also increase the credibility of a business. Also the collaboration of universities and other organizations open communication channels especially where information and literacy levels are low. The communal councils must engage with local Universities in order to cooperate on projects that benefit the local area. These recommendations were also made for the United Nations Development Program 2008

To create academic programs for sustainable development requires knowledge of problems, of the resources and local culture. These factors will enable accurate predictions. Although the ESD programs may be well or poorly run, the consequences of doing nothing are unacceptably high. Therefore, even when they are not directed with precision, it is imperative to create an ESD program. If this is complicated in formal or regular programs in education systems, it is much more complicated in non-formal levels. (McKeown, 2002)

What can be learnt from the self help project?

The self help project can be seen to show that for a development initiative within a community to be sustainable its foundations must be rooted in an educational program.

The self help project relates directly to the non-formal education characteristics as suggested by Fordham (1993);

- Relevant to the needs of disadvantaged groups
- Concerned with specific categories of person
- A focus on clearly defined purposes
- Flexibility in organization and methods

This non-formal program in order to be a success focused on targeting and selecting members of the community who are both motivated and capable of transferring their knowledge to future community members. This mentoring system will ensure that future generations of the community have sustainable systems taught to them and will empower the community to become self sufficient.

The self help project has highlighted other factors that are important to the success of the sustainable development. These include;

The educational program must have clear and concise objectives which are focused on the needs of the local community.

The training of mentors who are held in good regard within their community. These mentors will motivate other members of the community to act in a sustainable manner.

The educational materials used must be of good quality and relevant to the needs of the community. These materials can be passed on to other members of the community who did not take part in the self help group but who may be interested in the development of their community.

It is important to attract the voluntary participation of members of the community who are generally interested in achieving development. The participants of the self help project must be interested and enthusiastic as consistent attendance to the educational program is vital to ensure the development of the community.

The self help project offered an environment that helped to reach members of the community who may feel uncomfortable in a more formal setting. This should be taken into account when planning future community based projects as informal education helps to reach a wider audience.

For a greater success of the self help project a recommendation could be to use qualified teachers who are proficient in teaching strategies, content delivery and classroom management to facilitate in the educational program along with the community mentors. This would offer a wider based knowledge set.

The Informal Education that occurred during the self help project

The education setting was centred within the community of Guacrecon, with the various locations being peoples homes, university labs and outside in the areas that required development. By working with people in their familiar everyday environments allowed for the education to show that the development can have a real sustainable impact.

The informal education aimed at engaging all members of the self help project through conversation to explore the experiences and views of the local people. This helped to bring about a sense of equality and gave people the chance to have active involvement in the issues that affect their day to day lives.

Teachers and mentors from within the community aimed to encourage other members from Guacrecon to think about their experiences and situations. The mentors aimed to engage the community to understand their problems while providing insight into improved ways of working.

Lesson plans aimed at responding to the situations and experiences brought up in the brainstorming sessions within the community. This would help to instil values such as respecting each others views and help to establish dialogue amongst the members, while also adding a sense of democracy to the self help group.

A variety of methods were used for the education including – group work, brainstorming, training sessions and activities and individual study.

The self help program worked with a wide age group from young adults to older members of the community.

The education aimed at developing the knowledge of the community regarding their economic, social and environmental issues, including – community development, community action, best practical use of materials, tourism education and sustainable issues.

Formal Education for a Sustainable Development Program

It is important to recognise the role that the mentors from within the community will play in achieving sustainable development. As they will have first hand knowledge and experience of the sustainable issues faced from the self help project of Guacrecon it would be wise to use their experience to engage a formal educational programme. These mentors could be encouraged to facilitate groups and converse with the students in a formal setting. By using real experiences from real people will help the formal setting to educate a deeper understanding in the sustainable issues involved.

The informal educators should be encouraged to engage with other professionals within the formal setting. By conversing with other teachers regarding the problems faced from Guacrecon they will be able to educate and encourage staff within the formal setting to recognise the needs and issues surrounding sustainable development.

The formal education can adopt the materials used throughout the informal training which will help to add structure to the learning. The self help program should be seen as an extension to the formal education program and could be incorporated within a formal setting which offered a certified program. This certified program would offer the incentive to community members to gain a real qualification and help them to develop their skills and knowledge.

ESD programme in formal education

In order to construct a curriculum for a formal educational program that centres on the self help project, the objectives and aims of the self help project need to be the main focus.

Fordham (1993) suggests that for non-formal education the curriculum planning should be undertaken by the learners themselves. This bottom up approach enabled the community members of the self help project to gain a real understanding and take ownership of their problem and to focus on their specific needs.

The formal educational program should be centred on the needs of the self help group i.e. Education in sustainable resources, education focusing on tourism for an improved economy, community participation for social benefits. By focusing the formal education on these needs will enable the students to gain a real understanding of sustainable issues from a real world context. Also by highlighting the results of the self help project will help to put into context the sustainable issues faced by communities and how they can work together to overcome their economic, social and environmental issues.

The formal setting should engage and encourage conversation from the members of the self help project to establish the best course of action for the educational curriculum.

Allowing the community members to give feedback on course content and delivery will empower the teachers of the formal setting and help to improve the formal education.

Formal curriculum content in the context of self help housing

The education should lead to a certification or accreditation. Students should be encouraged to think about the problems they face and have input into the focus that the lessons will take. This will help the students to take ownership of their learning.

The content should focus on delivering education that aims to address the main objectives of the self help housing project, these being to improve the environmental, social and economy of the local community.

Environmental lessons

- What causes the degradation in structures i.e. wind speeds
- Using locally sourced materials to construct housing
- Techniques in constructing that incorporates traditional methods
- Renewable energy applications

Social lessons

- How to form community groups

- Mentoring schemes
- Business management focused on hostel/inn keeping

Economic lessons

- Beneficial effects sustainability can have for their economy
- The economic effects of ‘not acting’ and ‘acting’
- Tourism opportunities

The educational materials should be of a high quality which can be used as trusted resources which should aim to enrich the learning experience.

Lessons should have a more informal feel to them as this will encourage uneducated community members to take part and will not alienate them. If the students are made to feel comfortable then they will build greater confidence and results in the sustainable educational program will improve.

The formal program may have to incorporate informal lessons which enable the students to gain first hand experience of the sustainable issues. So lessons which are focused on the environmental issues should be undertaken by field trips to the various points of interest.

The formal program should be implemented within the Universities of IUTAG and UNEFM. These Universities have direct experience of the self help housing program

and will be best placed to offer a curriculum which will achieve results and help to establish education at the forefront of achieving sustainable development. Results from the formal program can be used to encourage other Universities and Governments to adopt sustainable issues within their work.

Huckle & Sterling, 1996 in Education for Sustainability suggests that an integrative principle between education, learning and sustainability exists. To achieve this integration it is important to enhance and build self developing and self reliant skills. Educational values such as empowerment, critical thinking, participation and self worth must be learnt and instilled in order to build a sustainable society.

The self help project can be seen to have a grasp on the integrative principle that Huckle suggests exists between education, learning and sustainability. This is due to the fact that the self help project focused on the development of the specific needs of the community while also training them in self reliant skills, i.e. construction techniques, local resource use. The self help program also aimed to empower the community through the mentoring scheme and the educational program encouraged the community to critically think for themselves in ways to overcome their problems. The self help group enabled an informal setting where participation was encouraged and also helped the community members to have a feeling of self worth through the learning program that valued their input.

A recommendation for the self help project to integrate education and sustainability further could be to have regular community meetings throughout the year, in which

participants should be encouraged to reflect on the changes and progress that have occurred in their community. This will help to instil the real positive changes and the personal development that has occurred and also highlight how important a role education plays in the achievement of sustainable development.

Huckle also suggests that the education should equip individuals and communities to act sustainably. It should develop their understanding of the environment and highlight social and economic issues that can benefit from sustainable development. The self help project achieved this by encouraging the community to critically think about methods to overcome the harsh environment in which they lived while also highlighting methods to best use the local resources. The education also developed the communities understanding into the social and economic benefits tourism could have for their community.

Vare & Scott (2007) argue that it is necessary to think of two complementary approaches to education for sustainable development. They label the approaches as ESD 1 and ESD 2.

ESD 1

- Promoting (informed, skilled) behaviours and ways of thinking, where the need for this is clearly identified and agreed
- Learning for sustainable development

ESD 2

- Building capacity to think critically about what experts say and to test sustainable development ideas
- Learning as sustainable development

The self help project can be seen to incorporate both approaches to sustainable development. The self help program clearly promoted learning as an outcome of the educational content while also offering methods to achieve a sustainable outcome. i.e. the use of local resources in construction promoted new learning while helping to achieve sustainable development.

Community members were instructed in methods to change their behaviour and to use local resources, learning for sustainable development ESD1. They were also educated into what causes the corrosiveness of their buildings, where they developed an understanding into the need to use new sustainable resources, learning as sustainable development ESD2.

By encouraging the local community to think about their needs and into ways of how they could improve their economy they built the capacity that would enable them to critically think about sustainable development.

Field (2003) suggests that community development education will enable the empowerment of individuals and build values and involve them in collective activities

that will improve their economic development. The self help project highlights that by educating the community in sustainable development will bring about the improved economic, social and environmental change they need.

Critiquing project against the UNESCO criteria

UNESCO 2007 issued guidelines for Teacher Education Institutions to follow that would allow for the effective incorporation of education for sustainable development into their curriculums.

By critiquing the self help project against the UNESCO criteria would allow the thesis to analyse the educational programme and also allow for recommendations that the education could undertake to ensure sustainable development.

UNESCO design criteria

ESD is locally relevant and culturally appropriate

The self help project is rooted in the area of Guacrecon as the problem the community finds is specific to their locality. By educating the community into the challenges they face locally they will be better placed to overcome their specific problems. The education fits in with the culture of the community as the self help project aims to build on the customs and traditions of their house building techniques to ensure that their values and culture are embedded within the sustainable development.

ESD is based on local needs, perceptions and conditions, but recognizes that fulfilling local needs often has global effects and consequences

The needs of the community and the conditions they find themselves in are central to the education for sustainable development. The self help project would be tailored to their needs from research gathered and through the interviews that had took place. The education program recognizes that by fulfilling the sustainable issues of the local community will have repercussions for the rest of Venezuela. It will allow other communities who live in similar harsh conditions to build on the work of the self help project and tailor the educational program to their needs. As this was a pilot study for Venezuela the results can be used to gain a real insight into the role education plays in building sustainable programs. Mentors from within the self help group can be used to teach new generations and their findings can be used globally to improve education for sustainable development.

ESD engages formal, non-formal and informal education settings and provisions

The self help project took part in a non- informal setting, while teachers who had a formal background where used to train community members. The results of the self help project can be used to guide a formal curriculum.

ESD is a lifelong endeavour

The self help project highlights the fact that for the community to be sustainable the education taught must be transferable. This means that members of the community must be taught methods to train and develop other community members. This would ensure that the education would be passed on through generations and would allow the

community to be self sufficient and self reliant in the future. The sustainability of the self help project relies on the community to take ownership of their problems while the educational program must guide them in methods to achieve the sustainability.

ESD accommodates the evolving nature of the concept of sustainability

The self help project encourages the community to think critically about their problems. By educating the community in the skills necessary to think critically will allow the community to adapt their skills and resources accordingly to future problems they may face. This will ensure that they have the skills necessary to adapt their goals and needs with the future challenges that the sustainability of their community requires.

ESD addresses context, content, pedagogy, global issues and local priorities

The self help project is a balance of these factors. The region, education level, needs and socio-economic aspirations all needed to be taken into account when setting education goals.

The self help project dealt with the well being of all three realms of sustainability- environment, society and economy;

ESD is not one size fits all, but must be created to account for regional and local differences

The self help project was tailored to the specific needs and environmental issues faced by the community of Guacrecon. It was not imported from another cultural, economic or geographic region. The basis of this project can be used as a guiding format for future communities who face sustainable issues but it must be tailored to their specific needs to accommodate regional differences.

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Appendix

QUESTIONNAIRE A

(For the selection of the Municipal Council of Cerro Pelón which will form the second group for the workshops)

1. To which Community Council do you belong?

2. Are you willing to participate as an instructor in the training of other members of your community?

Yes..... No.....

3. Which day of the week is the most suitable for you to participate as an instructor to support the work of teachers in workshops?

4. Do you support this type of training?

Yes... No...

5. Do you have any suggestions on improving the training?

QUESTIONNAIRE B

To evaluate the attitude and aptitude during the Cerro Pelón process of training

Dear community member from Cerro Pelon, this questionnaire aims to find out your interest regarding the use of natural materials to construct more durable housing. Please could you fill out the form with regard to your agreement of participating in a self help housing training scheme.

Name.....Age.....

Address.....Telephone.....

N° of family members.....N° of bedrooms.....

Date your house was built.....

1. Your house is: (mark with an X)

Conventional (bricks, concrete).....

Non-conventional (Adobe, Bahareque).....

Mix (i.e. concrete and adobe).....

Other (specify).....

2. When was last time you performed maintenance your house? (Mark with an X).

Less than 1 year..... From 1 to 5 years..... More than 5 years.....

3. Which climate factors affect and damage your house?

.....

4. Which building materials do you think could help to decrease the damaging of walls and roofs of your house?

.....

5. Which building materials would you agree to use to improve your house?
.....

6. Would you be interested in accommodating tourists in your home?
.....

7. Condition of house regarding the perceived damage to walls and roof. Expressed as a percentage of overall state of repair. (Completed by interviewer)

Excellent (0%)..... Good (from 1 to 30%)

Regular (from 31 to 50%)..... Bad (50% or more).....

QUESTIONNAIRE C

A Tourist approach to the self-constructed houses made with local materials and technology in Cerro Pelón - Venezuela

Name:

Age:

Occupation:

Marital Status:

Married:

Partner:

Single:

Dependants:

House:

Rented:

Owned:

Living with parents:

1. How many bedrooms do you have?
2. How many bedrooms do you need?
3. Do you agree to self-construct your own house?
4. Do you agree to use traditional designs and materials to construct your house?
5. Do you agree to use environmentally friendly materials?
6. How many electrical appliances in your household? (Specify which type and how many)

—

7. Which energy is the most appropriate for your house?

Conventional.....Renewable..... (Wind or solar power). Mix
(renewable and conventional).....

8. Do you agree to use non-conventional or renewable energy?

9. Do you agree to construct your house in such a way to avoid the need to use air conditioners?

10. Would you be prepared to join a group that aids the development of your community?

11. What factors are the most relevant for the development of your community?

Tourism..... Livestock..... Production of Aloe-Vera..... Local
handmade goods.....

12. Would you be prepared to use part of your house to host tourists?

13. How many bedrooms would you require to accommodate tourists?

14. Are you interested in learning about the potential of tourism in your area?
15. Are you interest in learning ways of promoting tourism in your local area?
16. Would you be prepared to recycle water for... toilets _____, watering plants _____, both _____.
17. Would you be prepared to use a non-conventional toilet that does not use water?

UNESCO 2007

Effectively incorporating ESD into the curricula

1) Guidelines for Teacher Education Institutions

Decide which themes to emphasize within their curriculums, syllabi, practices, and policies to ensure that teacher-education programs fit the environmental, social, and economic conditions and goals of their communities, regions, and nations.

Ensure that educators and administrators understand the concept of sustainability and are familiar with its principles.

Distinguish between “education about sustainable development” (an awareness lesson or theoretical discussion) and “education for sustainable development” (use of education as a tool to achieve more sustainable futures).

Use the following design criteria to evaluate ESD programmes (UNESCO):

ESD is locally relevant and culturally appropriate.

ESD is based on local needs, perceptions, and conditions, but recognizes fulfilling local needs often has global effects and consequences.

ESD engages formal, non-formal, and informal education (settings and provisions).

ESD is a life-long endeavour.

ESD accommodates the evolving nature of the concept of sustainability.

ESD addresses context, content, pedagogy, global issues, and local priorities.

ESD deals with the well being of all three realms of sustainability – environment, society, and economy.

ESD is not imported from another cultural, economic, or geographic region.

ESD is not “one size fits all,” but must be created to account for regional and local differences.

