An integrative systemic framework for sustainability when environment and tourism are connected: capacitation of the volunteers to the FIFA Football World Cup in Brazil

CARLOS HIROO SAITO
Department of Ecology, Institute of Biological Sciences and Graduate Program in Sustainable Development University of Brasília
Cx. Postal 04457, Campus Universitário, CEP 70904-970, Brasília-DF
BRAZIL
Carlos.h.saito@hotmail.com http://www.ecoa.unb.br

Abstract: - The integration between tourism and environment is presented by a case study related to governmental policies in the context of the realization of the World Football Cup in Brazil. The case study is focused on the decision of the Brazilian Ministry of Sport to organize a system of the volunteers to receipt the tourists, especially those foreign visitors during the FIFA Football World Cup in 2014 (the Brazil Volunteer) and the necessity to capacitate them in several knowledge disciplines by a virtual learning environment. The development of the instructional material focused on environmental issue was done in an integrative systemic framework, based on principles of offering an integrative view of the issues, compromised with people’s empowerment and critical thinking. A conceptual map was designed to guide the development of instructional material. The theoretical choices of educational planning, and the steps of its production are demonstrated. The general characteristics of the development process of the instructional material are commented and finally, some data from the course realization are presented.

Key-Words: - environmental education; hierarchic system; conceptual map; Brazil Volunteer, educational planning; virtual learning environment;

1 Introduction
Sustainability has been used as a magic word that can hide unsustainable practice under a positive rhetoric. For example, the tourism industry usually advocates the use of sustainable jargon as means of legitimization of their environmental harmful practices [1, 2].

Although sometimes it can be a perverse disguise, one can argue that in most cases there is some kind of fascination evoked by the word ‘sustainability’. The continuous greening of our society with the popularization of the word ‘sustainability’ also increases the demand for tourism in natural areas.

Nevertheless, this increasing demand also constitutes a new wave of pressure over environment and protected area. The contradiction lays on the fact that these protected areas have the objective to promote the contact between people and nature but also this same contact could increase the impact on there.

Most policy makers see this demand as opportunities to intensify the flux of visitation in natural areas, as a strategy to publicize the beauty of some particular biome, or the whole biodiversity of the country. The advent of the FIFA Football World Cup in Brazil in 2014 is just an example of how this first idea of intensification of the recreation and tourism in natural areas is superficially considered a pathway to sustainable practices.

The objective of this manuscript is to analyze an example of how tourism, sport an environment was integrated in a government sphere with a fragile recognition of the concepts of sustainability, and how this can be solved by an educational project.

2 Consequences of the increased visitation in natural protected areas
The simple intensification of the visitation in natural areas does not mean that there is a correspondent increase in environmental awareness by the visitors.
About this, it is interesting to see the results of a research in the Parque Nacional de Brasília, in Central Brazil. This park is one of the protected areas included by Brazilian government in the list of the Parks to be promoted for visitation by tourists during the FIFA Football World Cup, due to the proximity to the center of the city of Brasília. In this research, it were studied the interactions between capuchin monkeys and visitors in the Park, highly increased by the presence of people in the natural swimming pools, trials and picnic areas of the Park and the consequent presence of anthropogenic food that people are used to bring with them, which attracts the Capuchin monkeys. After interviews to the visitors and direct observations of the behavior of capuchins and visitors, the conclusion was that most of the observed interactions involved the presence of food and most of these interactions were initiated by visitors. These interactions have increasingly become a socio-environmental conflict, with register of several cases of monkey attacks to human, including scratch and bite [3].

What the visitors do not know is that the anthropogenic food eaten by monkeys can increase the levels of glucose and cholesterol, causing obesity, heart problems and diabetes in these animals. They also comment that the anthropogenic feeding of the monkeys can also have a negative impact on the interdependencies within the ecosystem: the reduction of the seed dispersal as a consequence or the decreased intake of Cerrado fruits – an important ecological function of these animals [4].

From another point of view, the increase of the visitor numbers in a natural protected area can signify an increase in the Park income. Some policy makers are defending that natural protected areas should be seen as business opportunities, reinforcing the neoliberal discourse of the reduction of the “size” of the state. To the maintenance of the natural protected areas this reduction (or the absence) of the State in social life represents the necessity of the commodification of the nature and the search for income provided by visitors or sponsors. The neoliberalism has for aim to bring everything to the market, thus the commodification of nature is to transform the concept of national parks from protected areas to leisure club in social imaginary. This can be a backspace in means of the environmental education.

Also, it is important to go ahead of the simple recognition of the problem and address the necessity of build an integrative framework to handle the interface between environment and tourism in a sustainable development perspective as an environmental education issue. According to The Intergovernmental Conference on Environmental Education held in Tbilisi in 1977, environmental education should “be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective” (Recommendation 2, 3 (guiding principles) [8].

3 The necessity of an integrative systemic framework: case study

The present case study is related to governmental policies in the context of the realization of the World Football Cup in Brazil, and focused on the decision of the Brazilian Ministry of Sport to organize a system of the volunteers to receipt the tourists, especially those foreign visitors during the FIFA Football World Cup in 2014 (the Brazil Volunteer).

The Brazil Volunteer (Brasil Voluntário), a program of the Brazilian Federal Government, was created to meet the FIFA Football Confederations
Cup Brazil 2013 and the FIFA Football World Cup Brazil 2014. This program is managed by the Ministry of Sport and it has also the participation of the Ministries of Defence, Tourism, Culture, Science and Technology, Civil Office, Foreign Affairs, Labour, Education, Health, Justice, and the Ministry of Planning, Budget and Management, in addition to the Department of Civil Aviation. It cooperates with the volunteer program of FIFA and it constitutes an network of social mobilization to act in airports, touristic attractions and other areas with flows of people, aiming to give support to the football fans, unaccredited media, tourists and the population in general.

An early experience in giving capacitation to these volunteers was already developed during 2013 for the FIFA Football Confederations Cup in Brazil. Volunteers were capacitated in several knowledge disciplines by a virtual learning environment. The involvement of the environmental issue was just in the second edition of the capacitation course for volunteers in 2014, focused on the FIFA Football World Cup. The Ministry of Sport asked the University of Brasilia to develop an instructional material (module) about the environment-related knowledge for the new capacitation of volunteers [9] to complement the others already done: Hospitality and Tourism, Soccer history and mega-events, Safety and First Aid, and Foreign Language – English, Spanish, French and Italian.

In parallel to this program, the Brazilian Ministry of the Environment created with the Ministry of Tourism and Embratur the World Cup Parks project (Parques da Copa), aiming to encourage tourism by improving infra-structure (access, the tourist information center, signaling, and the maintenance of bathrooms) of 27 protected areas distributed for all the regions. It is expected that an adequate infrastructure will permit to receive visitors in the Nature Conservation Units, those protected areas nearby cities to host the football matches.

According to the Ministry of Tourism at that time, the intention was to increase the competitiveness of Brazilian tourism. Considering that it was expected that many people would visit National Parks, the idea was to offer tourists more comfort and get ready to treat tourists well.

As it can be seen, the government actions are disconnected, and the Brazil Volunteer Program does not include the participation of the Ministry of the Environment. And the World Cup Parks project does not include the Ministry of Sport.

When the opportunity of the inclusion of environmental issues in the volunteer capacitation course appeared, the first idea was to integrate the different Ministries actions. But an instructional material could not be developed only around this decision. Thus, it can be a clue to find the conducting wire, at the center of a structured design of environmental education concepts.

Environmental education advocates an integrated view of the knowledge, which should be transported to the governmental policies. The Treaty on Environmental Education for Sustainable Societies and Global Responsibility, of 1992, defended that “Environmental education should treat critical global issues, their causes and interrelationships in a systemic approach and within their social and historical contexts” (Statement 12) [10].

Thus, it was decided to develop the instructional material in in a systemic approach, building an integrative view of the issues and compromised with people’s empowerment and critical thinking [11, 12]. We can consider this decision the indenture level zero in a hierarchic analysis, and it defines the general context of the environmental education material development. The structured hierarchy is composed in lower subsequent level (level minus one) by the concept of integration, empowerment and critical thinking, representing the main theoretical pillars.

The hierarchic analysis implies in the existence of multi-dimensional different scales, corresponding to the levels of perception and problem analysis (Figure 1). This represents a systemic view with a top-down approach for planning. In this procedure, we start from a macro to a micro view, level zero to minus one, beginning with general objectives or foundations to the implementation of specific objectives and developments [13, 14, 15].

![Hierarchic multi-dimensional scales](image-url)

**Figure 1.** Hierarchic multi-dimensional scales representing the levels of perception and problem analysis for the development of the instructional material.
It was developed a conceptual model of the instructional material (Figure 2) to visualize this integrated systemic framework. The graphical model, in the form of conceptual maps, allows quick visualization of concepts, the topology of the interconnections among network entities or objects, by linking expressions.

Conceptual maps, because of the easy apprehension of the set of relationships, they improve communication between experts and ordinary people as educational activity, as well as facilitate communication among the experts themselves who are usually isolated in their specialties. This feature would allow overcome the problems of lack of proximity of theories, concepts, and common goals among the different areas of knowledge [16]. Thus, conceptual modeling (including conceptual map) is recognized as a very useful technique for the construction of interdisciplinary knowledge [17].

The vision of this integrated systemic framework permits the definition of the pathways to the development of the instructional material about environment and sustainability for the Brazil Volunteer program.

From that point we can list several points of decision (basic questions or central problems), in a lower level (level minus two) in hierarchy:

1) How can we help people have a nice visitation tour during the FIFA Football World Cup in 2014?
2) What type of knowledge they need to achieve this goal relative to environmental issues?
3) How can we integrate different Ministries and their policies?
4) How can tourist enjoy the natural protected areas and how can these natural protected areas support the large amount of people visitation?
5) How tourist can be responsible for the local welfare?
6) How can we connect the general context of the instructional material with empowerment and critical thinking theories?

In a structured systemic approach, what appeared as a first idea was put in a secondary lower level, at

Figure 2. Conceptual map designed for the development of the instructional material about environment and sustainability for the Brazil Volunteer program. In yellow boxes, it is represented the level zero. In orange boxes, level minus one is constituted by the main theoretical pillars. In blank boxes, italicized letters, level minus two is represented by the basic questions or central problems. In green boxes, level minus three shows the pathways to answer the basic questions proposed in the immediate upper level.
the same baseline of others six necessary decision to be taken.

In a new systemic approach, the first question “How can we help people have a nice visitation tour during the FIFA Football World Cup in 2014?” should be answered by describing and understanding the logical structure of the sequence of matches each team will have to play during the FIFA Football World Cup in 2014, carrying theirs fans behind them.

Brazil is a megadiverse and large country, and the FIFA Football World Cup was organized in a way that every national team has to play matches in different host cities, usually placed in different regions and biomes. The advantage of this planning is that the national team players and their respective fans will be able to know the Brazilian diversity. On the other hand, they will be exposed to the different environmental conditions, and they will have to be prepared for them. Two types of situations are expected: first, the tourists who are in a determined town to watch a football match will remain there and need information about the host city; and second, the tourists are planning to go to the next city of their national team to watch the football match, and they need information about the new destination.

The role of an instructional material to capacitate volunteers to receipt and guide tourist during the FIFA Football World Cup is to help understand this environmental diversity and complexity to help people have a nice visitation tour.

This recognition leads to another decision about the development of the instructional material: the necessity to have a staff of researchers working in this development from different parts of Brazil, so to bring experiences and local knowledge. Researchers from different biomes and regions were contacted, and a multi-institutional and multi-disciplinary background formation staff was put in work together: researchers from Amazonas, Rio Grande do Norte, Bahia, Paraiba, Minas Gerais, São Paulo, Rio de Janeiro, Paraná, Rio Grande do Sul and Distrito Federal composed the staff.

After this conclusion, the second question “What type of knowledge they need to achieve this goal relative to environmental issues?” can be answered. The list of issues related to the relationship between environment and the FIFA Football World Cup included the concept of biome, the characterization of each Brazilian biome, climatic features of the host cities, especially in June and July where the matches will take place, sanitation and public health, and the nature protected areas that can be visited nearby the host cities.

Additionally, we decided it was important to mention that the mascot of the 2014 FIFA Football World Cup was inspired by Brazilian fauna: the mascot named Fuleco is a three-banded armadillo, known scientifically as Tolypeutes tricinctus. The three-banded armadillo is a native and endangered species, and it is also an exclusively Brazilian species [18]. Besides these features, the three-banded armadillo, whenever it feels itself threatened, it reacts closing itself in a ball shape. This association with the football cup was decisive in the choice as the mascot of the 2014 FIFA Football World Cup.

Now, the third question “How can we integrate different Ministries and their policies?” can be answered by recognizing that the World Cup Parks project should be explicitly presented and discussed inside the Brazil Volunteer Program. This way, the different Ministries could start and sometimes deepen their integration (if any fragile one exists).

This is the opportunity to disrupt the frontiers of the sectors in which government is organized. These sectors, represented by Ministries, sometimes are constituted from the distribution of government positions to different political parties to receive support to the government central party. These procedures used to increase the lack of communication, already established by the knowledge fragmentation. This integration should be held in means of equal opportunities to promote both sectors and effectively integrate Ministries policies and agendas, by an epistemological perspective, avoiding the attempts of one Ministry to excel more than others.

The fourth question “How can tourist enjoy the natural protected areas and how can these natural protected areas support the large amount of people visitation?”

The decision of including the World Cup Parks project in the Brazil Volunteer Program, besides the necessity to integrate Ministries policies presented before, has another justification: The public natural protected areas are becoming increasingly important as tourist venue all over the world [19], and so, it is expected that even if the World Cup Parks project didn’t exist, it would have a flow of tourist to these natural protected areas in the host cities surroundings.

The forth question has two parts: the first one is related to the tourist welfare, and to get this, the volunteers capacitation should provide information about the location of these natural protected areas, their characteristics, importance and natural attractive for visitation. The second part is related to the necessity to orient visitors about the expected
behavior inside a natural protected area, to keep preserving these areas and avoid anthropogenic impact.

Brazilian Ministry of the Environment developed a campaign titled Conscious Behavior in Protect Areas, focused on terrestrial ecosystems, with another version for coastal and marine environment called Conscious Behavior in reefs environment. These campaigns were set years before the FIFA Football World Cup, and sometimes it seemed to be forgotten by policy makers even inside the Ministry of the Environment. Some very precise orientation are presented to visitors in terrestrial protected areas, for them to avoid setting fire to vegetation, disposing waste or opening new unnecessary trails which can damage vegetation under different ways. At the same way, scuba divers, snorkelers and other visitors of the marine and coastal protected areas are advised to avoid standing on reefs and walking over corals because this can cause damages on reef structures. They also are oriented that the collecting of corals by tourists as souvenirs may cause long term alteration to their communities. They also are taught to avoid re-suspending sediments because this can undermine the resilience of reef ecosystem [20].

It is just because of the integrated systemic approach, and not because of the integration of the Ministries policies, that we could defend the inclusion of this content in the capacitation program. By this conscious behavior guide, we could present a set of recommendations tourists should follow for their own safety and to protect nature and its biodiversity.

The fifth question “How tourist can be responsible for the local welfare?” is a consequence and complement of the campaign “conscious behavior” because when tourist respect and goes protecting the nature in the protected areas, he/she is contributing to the local welfare. Besides this, sometimes we can find traditional communities around these protected areas, in visitors can eventually interact with local people.

In Chapada dos Veadeiros National Park, in Central Brazil, for example, there are quilombolas, who are people belonging to communities descending from runaway slaves [21]. These hidden communities (called quilombos) in the heart of the country are winning rights to their land today, and they are helping protect it. Two of the listed conscious behaviors are directly related to this issue: “a) Protect the natural and cultural heritage of the visited places. Be courteous to other visitors and to the local population, and respects existing standards; b) Treat the locals with courtesy and respect. Keep the gates the way you found it and do not go into houses and sheds without asking permission. Take the opportunity to learn about the habits and culture of the rural environment”.

These listed conscious behaviors are in accordance with the principles of the Treaty on Environmental Education for Sustainable Societies and Global Responsibility, of 1992, which states that “14-Environmental education must recover, recognize, respect, reflect and utilize indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to change ethnocentric approaches, as well as the encouragement of bilingual education”.

Nevertheless, we aimed to expand this traditional focus of local welfare to the public health issue, promoting the necessary interdisciplinary approach. In the instructional material for volunteers capacitation, we included a section about the several diseases associated to environmental conditions such as dengue fever and malaria, among others. Both dengue fever and malaria are diseases transmitted by the bite of an infected mosquito (note that in the case of these two diseases, the mosquito species are different for dengue fever and malaria). So, the mosquito in both diseases should be previously contaminated biting an infected person to transmit the infection. The developed instructional material alerts that all persons contracting the disease should keep him/herself isolated, because the epidemic cycle starts when the local mosquito bites an infected human being and itself becomes infected [22]. Some direct advices are the use of mosquito screens on the windows, use of insect repellents (“bug sprays”), and not leave the house. The central point of the argument is that it is a social responsibility as a supportive, socially conscious citizen, do everything not to be bitten by the mosquitoes. Thus, that person will not be a propagator source of the disease, and so we can avoid epidemic [23].

As it can be seen, tourist also can be responsible and contribute to local welfare, and this depends on the way one sees the world, that is why there is the necessity to develop an integrated framework connecting environment and tourism.

The sixth question “How can we connect the general context of the instructional material with empowerment and critical thinking theories?”

A new question derived from the former one is if we can find pathways to empower volunteers (and also tourists guided by the volunteers) in terms of
self-improvement, aiming to take control of one's own destiny, beyond the FIFA Football World Cup.

The decision taken during the development of the instructional material was to present the concept of climate normals. Although the main interest in climatic characterizations of the host cities is focused on the period of the matches (June and July), the idea of explaining the concept of climate normals came from the recognition that this concept could help people to plan their vacations in rational terms, avoiding the false advertising. In Brazil, many travel agencies announce cheap and discount travel deals for destinations where it is raining just in that period of the promotions.

The way to unmask false deals is getting help from the scientific knowledge: the Climate Normals are represented by the latest three-decade averages of climatological variables, including temperature and precipitation [24]. This set of data can give people a general idea of what is expected from climate in each month of the year. Of course this is not guarantee of certainty, but it will express the general tendency, and so people can know if it is a rainy season, or it will have cool temperatures.

Consulting the Climate Normals, people are able to know if the travel agency is announcing discount travel deals for rainy destinations at that time, or if it is really a great opportunity to have a nice and cheap travel. Also, people can decide, based on the Climate Normals, when is the best period to travel to a certain place. This kind of knowledge can give power and autonomy to people, for them to be capable to decide by themselves and judge the opportunities and deals. This can be considered an empowerment process, and also a critical education process.

To complete the framework of a critical education process, we included maps, tables and graphs to present information in different ways and shapes.

4 The use of the instructional material in the virtual learning environment

The capacitation course was held in the customized moodle virtual learning environment coordinated by University of Brasilia, in the first semester of 2014.

The total number of volunteers who attended the course was 3,475 people, from all of the twelve host cities, with different ages, varying from 18 years old until more than 60 years old. There was also more than fifty foreign volunteers who attended the course. Female corresponded to 56,8% of the training volunteers.

A questionnaire was applied to volunteers after the course. The Center for Open, Continuous and Long Distance Education (CEAD) of the University of Brasilia, responsible for the virtual learning environment in which the course was offered to volunteers, decided to do the assessment of the course in general, and not for each modules (or disciplines) separately.

The questionnaire is composed by some Likert items, all of them with five options (Strongly disagree, Disagree, Undecided, Agree, Strongly agree) constituting an ordinal scale of measurement. A Likert item is a statement which the respondents are requested to choose an opinion based on subjective perception of the level of agreement or disagreement relative to the statement [25, 26].

The items of the questionnaire were the following: Item 1-The topics/contents of the modules were relevant to the role of volunteer; Item 2-The course offered me a condition to work as a volunteer with higher quality and awareness of my actions; Item 3-The depth of the contents was appropriate to subsidize the activities of volunteer; Item 4-The contents met my needs knowledge about the topics; Item 5-The contents of the modules presented internal cross-references, integrating modules; Item 6- I considered the quantity of lectures adequate to the estimated time duration of the modules.

The result offered a positive evaluation of the course, with the predominance of the respondents who indicated that they strongly agree or agree with the Likert items: For the item 1-The topics/contents of the modules were relevant to the role of volunteer, it was found that 92.4% of the respondents indicated that they strongly agree or agree with the item. For the item 2-The course offered me a condition to work as a volunteer with higher quality and awareness of my actions, it was found that 94.4% of the respondents indicated that they strongly agree or agree with the item. For the item 3-The depth of the contents was appropriate to subsidize the activities of volunteer, it was found that 89.7% of the respondents indicated that they strongly agree or agree with the item. For the item 4-The contents met my needs knowledge about the topics, it was found that 91.4% of the respondents indicated that they strongly agree or agree with the item. For the item 5-The contents of the modules presented internal cross-references, integrating modules, it was found that 89.4% of the respondents indicated that they strongly agree or agree with the item. For the item 6-I considered the quantity of lectures adequate to the estimated time
duration of the modules, it was found that 85.6% of the respondents indicated that they strongly agree or agree with the item. This last one presented the lowest level of agreement, and some very few volunteers complained that the module about environment was more extensive than they expected. It was found that almost 50% of the volunteers are graduated level. Also, data demonstrated that more than 33% of the volunteers are unemployed, and so they could invest time into knowledge acquisition.

The module about environment was the only one who adopted a systemic approach for the educational planning.

5 Conclusion

The adoption of an integrative systemic framework to the instructional material development lead to a more complete and dense structure because there was a search for integration and efforts to fill the gaps in knowledge and establish bridges between concepts.

The use of the conceptual map for the identification of the interactions among concepts and issues was positive to accomplish the integrative systemic framework. This procedure allow us to define the level zero decision in a hierarchic system and also the immediately lower level decision, represented by the theoretical foundations in terms of concept of integration, empowerment and critical thinking.

Environmental education requires a careful planning both of the strategies to achieve goals of promoting values, and the necessary knowledge about critical issues, so that stakeholders can develop an ecological literacy. Particularly when environment and tourism are connected and are part of the general framework of the educational activity, issues like conscious behavior and possible anthropogenic impacts on the environment should be demonstrated. Conceptual map developed in a systemic framework is capable to cope with this requirements.

6 Acknowledgements

The author is thankful to Ercilia Torres Steinke, Christian Niel Berlinck, Everaldo Skalinski Ferreira, Ivete Teresinha Saito, Romero Gomes Pereira Silva, Sofia Araújo Zagallo, Alexandre de Gusmão Pedrini, Claudia Beltrame Porto, Fabio da Purificação de Bastos, Maria Lígia Cassol Pinto, Jesuete Pacheco Brandão, Diana Gonçalves Lunardi, Giovanni de Farias Seabra, Marianna de Santana Pinho, Maria do Socorro Lima Castello Branco, Erika Germanos for working in the production of the instructional material, and to the Center for Open, Continuous and Long Distance Education (CEAD) of the University of Brasilia for making the revision and adaptation to the virtual learning environment. The author is also thankful to Thérèse Hofmann Gatti Rodrigues da Costa, Dean of Extension, and Valdir Adilson Steinke, for the opportunity to develop the instructional material and to participate in The 3rd International Conference on Sustainable Tourism and Cultural Heritage (STACH '14) representing the University of Brasilia.

References:
