

“Nós no Mundo”: communicating sustainability to Brazilian public

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Abstract

This article is a case study reporting and analyzing the informal education approach of an interactive exhibition on the theme of sustainability developed by the Museum of Life of Oswaldo Cruz Foundation within the context of RIO+20. The exhibition addresses topics such as exaggerated consumerism, climate change, energy matrices, social inequalities and environmental degradation as a byproduct of our economic model and explores some alternative and more sustainable scenarios. It promoted a broad debate on sustainability and relevant environmental issues with the museum's public emphasizing our individual and social responsibilities in the preservation of our planet and species. At the end of the exhibition there was a wall made of PET bottles where the visitors left their messages for a sustainable future, which included drawings from preschool children. The audience evaluated the exhibition regarding their degree of satisfaction and interest by voluntarily filling in digital questionnaires with their opinions about the exhibition. The exhibition received a positive overall evaluation from the visitors. We assessed the visitors

understanding of the central topics approached by the exhibition and discussed by mediators along the visit and especially the emphasized importance of our social responsibility in the preservation of our planet and species through the analysis of the Collective Subject Discourse methodology of the messages left in the bottles.

Although the analysis is still in process, the occurrence of central ideas and discourses tuned with the message conveyed suggests that the exhibition contributed to increase its public's awareness on these pressing environmental issues.

Introduction

The advancement of a social logic of endless accumulation, rooted in scientific and technological development of increasingly predatory nature of men and their consciences led our society to a crossroads difficult to overcome. While the current economic model derived from the industrial revolution accelerated economic growth and generated increase in the level of welfare of the people this was underpinned by the predation of natural resources. For centuries society has been refined and taking advantage of advances in science and technology, keeping however its paradigm of infinite consumption of finite resources and deepening social inequalities.

Faced with this crisis, and the large and growing popular pressure, and aiming to minimize damage from 1970 on UN (United Nations) has been conducting international conferences through roaming environment, one of whose most famous undoubtedly was held in Rio de Janeiro in 1992, known as ECO-92. After twenty years, a was held in Rio de Janeiro hosted a new conference with an initial proposal to formulate a kind of "review" of progress and setbacks concerning what had been proposed and signed by nations and international goals since then. This event became known as Rio+20, which occurred in 2012, in a clear allusion to the previous conference.

Amid this historical context and relevance that underlies in achieving the Rio+20, the Museum of Life/House of Oswaldo Cruz/Oswaldo Cruz Foundation, collaborated to promote this discussion with the Brazilian society by developing an exhibition entitled "Nós do Mundo" that addresses the issue of environmental degradation and its relationship with the hegemonic economic model. The exhibition was presented at Museum of Life from May 25th to July 30th of 2012 and since then has already traveled to

other venues. These included Brasilia and Teresina, Piauí, the House of Science of the Federal University of Rio de Janeiro and now is currently being mounted at Museum of Science and Life at Duque de Caxias, a city nearby Rio de Janeiro. We chose the title “Nós do Mundo” because it has a double meaning and could be translated either as “We from the World” or “Knots of the World”, both perfectly suited to the theme in focus. The exhibition consists of three main modules named "Visions of the Planet", "Scenarios" and "Interactives". It has a trained team of mediators that received school groups and promote the discussion about the topics approached by the exhibition and engaged the public in complementary activities such as cooperative game playing, storytelling, arts and crafts workshops all designed according the age of the audience.

The module "Visions of the Planet" begins when the visitor enters the exhibition through a corridor made of two big screens (3m x 2m). There, beautiful and intriguing images of Earth's ecosystems and biodiversity were projected simultaneously. This area was designed to produce an aesthetical impact on the visitor, marveling him and awakening a feeling of reverence towards nature. In the next section there are more beautiful images in backlights now including men as part of nature and the audience is under signs with statistics of environmental degradation such as deforestation, extinction of species and melting of the icecaps to reflect on the issues that "hang over our heads". These signs were not placed as a threat but in order to promote among the visitors the understanding of themselves as historical subjects responsible for the much needed future changes (Freire, 1999). The "Scenarios" module introduces visitors to two opposed walls, containing on one side our current negative scenario; garbage; pollution; excessive consumption; social inequality; hunger; health issues; globalization and on the other side a more sustainable scenario with some possible solutions to such problems, as alternative "clean energy" sources; cooperative work; new technologies; local development strategies among others. This module aims to bring forward issues that are not so obviously related to sustainability or nature preservation from the common sense point of view, such as social inequalities or consumerism since these are some of the pillars of our current economic model and as so perceived as natural to most people. This was designed to show the audience that achieving a sustainable society implies in a more profound change than simply adopting some individual behaviors or attitudes. Of course,

individual contributions are important and valuable though a significant change will only be achieved by a cultural change allied to social engagement and political participation.

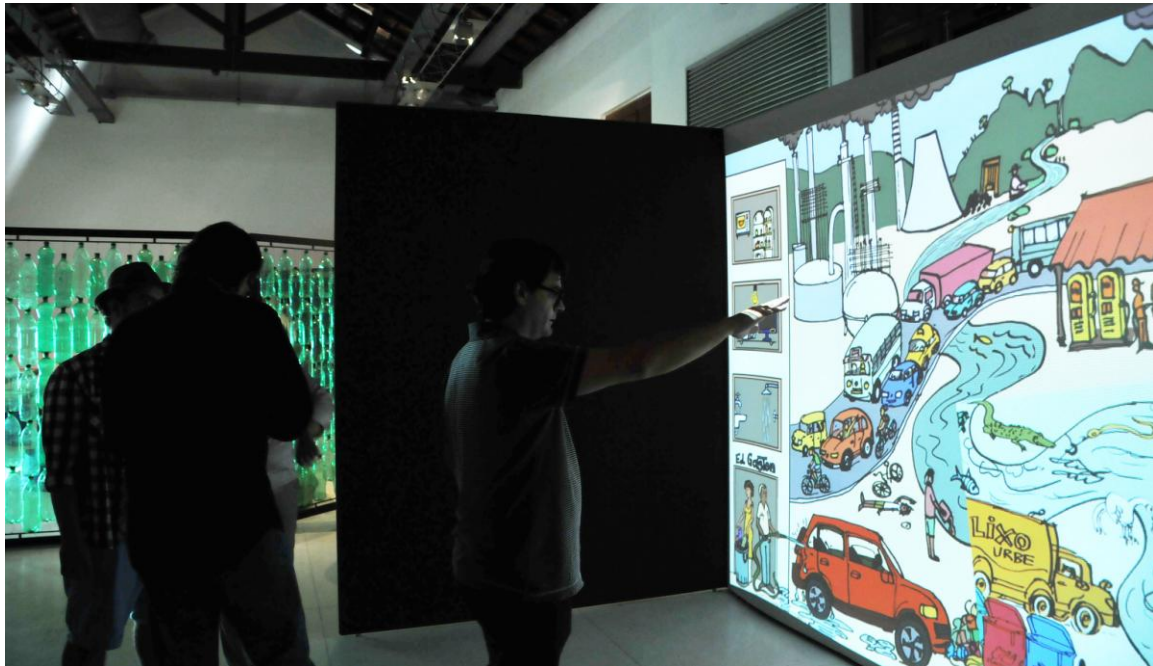


Figure 1

The last module consisted of the following interactive exhibits "Market" "Electrified House Model", "Timeline", "Cycling for energy", "Exploiting Scenarios" and "Message in a Bottle".

The "Market" aims to show visitors the environmental cost of producing some of our everyday use products (Loureiro, 2012). By passing a barcode reader into the products, the visitor gets information about the amount of water used in their production or the time that their packaging materials take to decompose in the environment. In some cases alternatives for recycling certain products are informed.

The "Electrified House Model" shows visitors the power consumption (Kw/h) of appliances, electronics and lamps through the model of a house (UNESCO). By pressing the button corresponding to one appliance, the house shows the maximum or minimum value of its consumption. When all devices are connected, there is an overload in the system and the lights go off, and visitor receives an explanation of the event.

In "Cycling for Energy", while pedaling a dynamo transforms kinetic energy produced by the visitor into electricity, lighting up a panel connected to it. This exhibit aims to show that there are alternative ways of producing energy although the scientific principles involved are always the same.

The "Exploiting Scenarios" exhibit uses a sensor that detects the hand of the visitor and through the movement performed it changes the landscape of a city projected on screen from degraded to sustainable.

The "Timeline " exhibit presented visitors with the events related to either to environmental degradation or environmentalism that have occurred since 1962, the year chosen as the starting point because of the publication of the book "Silent Spring", until 2012 with the completion of the "Rio+20".

At the end of the exhibition the visitors were invited to leave their "Message in a bottle". This exhibit was a wall of PET bottles, into which the visitors of all ages should leave their messages expressing their views of a sustainable future. Small children were asked to draw as they do not know how to write yet, so they were not excluded from the activity. Papers deposited in the bottles are the source of the analysis presented herein, focused on one of the main categories that more closely relates to the theme of the exhibition: sustainability.

Methods

The exhibition was evaluated using two different methodologies. A digital questionnaire was made available at the exit to the visitors voluntarily fill in with their opinions about the exhibition. This questionnaire asked twenty objective questions about their satisfaction degree and other specific aspects as aesthetics, mediation, comfort, quality of the information provided, visitors profile and how did they know about the exhibition. Besides those, there were few open questions aiming to know what visitors liked most or least about the exhibition and asking their comments and suggestions. This evaluation was mostly directed to spontaneous visitors, since scheduled audience has a limited time for visiting. The visitors understanding of the central topics approached by the exhibition and discussed by mediators along the visit and specially the emphasized

importance of our social responsibility in the preservation of our planet and species was assessed indirectly through the analysis of the messages left in the bottles.

The analysis of the messages left by visitors in PET bottles was performed by the Collective Subject Discourse (CSD) method (Lèfevre&Lèfevre, 2012). This form of analysis allows for qualitative and quantitative interpretation, providing knowledge of the meanings expressed in the discourses and the number of respondents who shared discourses and compounded each of the categories found.

The texts from the messages were selected and grouped according the compatibility of meanings expressed. When the same message contained texts whose meanings correspond to more than one category, they were replicated and also classified into these categories. This is the first step of the analysis that consists in the selection of Key Expressions (K- Ex) in the discourses. These Key Expressions and their respective texts are then grouped into broader categories, called Central Ideas (CIs) expressed by the respondents. The texts of each K-Ex are arranged by similarity and rewritten with a minimum of interference generating a synthetic discourse in the first person of singular presenting all the speeches found within that K-Ex. A Central Idea is a collection of discourses representing different K-Ex it encompasses. These synthetic discourses show the collective vision of the thoughts individually expressed by visitors. Or, quoting the authors of the method, the CDS "seeks to describe and express a particular opinion or position on a given theme present in a given socio-cultural stratum" (Lefèvre and Lefèvre 2005; 23 p.).

Two indicators give the quantitative aspect of the method: the intensity of a discourse and its amplitude. The intensity is the "strength" of the discourse and is measured by the number or percentage of K-Ex composing each of the Central Ideas. The amplitude show how these ideas are spread among specific groups that share characteristics such as gender, age and others of interest. Since the messages were anonymous, we could not analyze the amplitude of these data in this research. Thus, it is possible just to understand the motivations expressed in the discourse and the frequency of subjects who keeps certain categories of opinion. This dual analysis provides the collection of expressed opinions on a given topic and their relative weight in relation to total answers provided.

Complementing the analysis by CSD method, we analyzed texts regarding their Anchors, i.e., possible ideologies and beliefs expressed by the thoughts of the groups.

Results and Discussion

The exhibition “Nós do Mundo” received an audience of 8,672 people during the two months that it was exhibited at the Museum of Life. According to historical monitoring data of the Museum of Life, this audience encompasses approximately 70% of scheduled visits, among them 60% of schools, and 30% of spontaneous visitors (Damico & Studart, 2008).

Only ninety-nine persons responded the digital questionnaire at the end of the visit, representing 3,8% of the spontaneous audience. The exhibition received a very positive overall evaluation from all the respondents.

The activity proposed in the module “Message in a Bottle” resulted in total 2727 messages. From these total messages there were 104 evaluating the exhibition, 632 with drawings, 241 messages that were discarded (they were either illegible, incomplete or nonsensical in relation to the subject) and 1750 with texts of interest left by visitors spontaneously, many of them having more than one discourse. Research on visitor opinion about sustainability on the planet, after the stimulus provided by the exhibition is being performed from the 1750 messages (number representing 13 % of the total audience) containing 2470 discourses of interest. The selected discourses were categorized by their Central Ideas and the intensity of their participation in the discourses composition analyzed.

The Central Idea “Whishes” showed emotional speeches regarding life and the planet, opinions and positions ecologically naïve stemmed from common sense, as "Save the Nature or the Planet" and religious references (Anchors) as for example, that salvation lay in the hands of God. This CI was present in 308 (12,5%) of the text messages and had the lowest intensity. These discourses also posited the solutions to the problems of our unsustainable society as someone else's responsibility and for some depending on divine intervention to be solved. Although differently from the discourses classified in the category Environmental Issues that revealed some knowledge about the

challenges involved in achieving sustainability the discourses categorized as “Whishes” did not show any significant knowledge or awareness on the subject.

The Central Idea “Environmental Issues” encompassed discourses in which people pointed punctual or general environmental problems as the main challenge to achieve sustainability. Although these discourses presented a range of complexity and awareness degrees many of them expressed common sense ideas (Anchors) such as forests are the lungs of the planet, or concepts learned in school, generally related to behavioral aspects of environmental education (i.e. save water, dispose garbage properly, etc.). This result was somewhat expected since approximately 60% of the visitors were school students (Damico, Mano and Köptcke, 2008). The Central Idea “Environmental Issues” was present in 1,440 (58,3%) of the messages, and presented a higher intensity in relation to others. Its K-Ex were grouped under the following themes: Recycling (173) Garbage (215), Cleaning (313) Pollution (339), Deforestation (137), Extinction and Animal Protection (46), Energy (51), Air (27) and Water (139).

The discourses containing the Central Idea “Action” revealed a higher awareness about the theme and people expressed a sense of responsibility and knowledge that is required to take some actions to achieve a more sustainable society. This CI showed an intensity of 722 discourses (29,2%), ranked by K-Ex on: sustainability (386), technology (58), actions required in the political and social sphere (278).

In this paper we will focus on the main K-Ex sustainability because it was the central theme of the exhibition. The discourses that talked about sustainability presented diverse points of view about the subject so they were subdivide in different K-Ex according their specific meaning and a sample of their the most representative (higher intensity) CSDs can be seen below.

K-Ex	Meaning	Intensity	Example of DSC
1	Express a more apocalyptical view of the situation and a religious anchorage. Though reveals an awareness of our social responsibility and the actions needed to achieve sustainability. It shows also a misled common sense notion that we need to save the planet, but understands that our species is threatened.	115	<i>"If mankind does not realize that we are part of the cosmos and that whatever earth suffers, we will suffer together, that our planet is becoming increasingly damaged and this way the "end" will be closer ... without the planet there will be no life ... if we do not watch out just in a few years there will be nothing left to save...We have to wake up to reality: to have a better world for all species, the environment must be protected and cared for and our mineral resources preserved, because they are running out. This is becoming more real, and we need to stop being selfish and stubborn and care more and protect the planet, making sustainable cities. We are responsible for the planet we live in, so we should love it, treasure it and keep it, ensuring our future and of our children and grandchildren."</i>
2	The first part of this discourse is more childlike and has also this sense of urgency in taking some action facing the current situation ("total disaster") though it fails to point solutions and lay the responsibility to act upon the future generations although recognizes that that's necessary to do something immediately.	113	<i>"Hi, friend of the future. Our planet was so full of animals and is now battered and is a total disaster. For the world does not die we need to preserve it now. I hope you, the new generation, learn to preserve nature. So please, you improve the planet and help save the world and preserve the future because it is important and he (the world) will be happy. Let' us take care of the world, please! The Earth is calling for help! Life to the environment! Preserve the green to keep on living!"</i>

3	<p>This is a hopeful discourse almost a religious exhortation for people to respect each other and nature, living fraternally (anchorage). Simultaneously call for individual action and change pointing out the risk of being responsible for the end of the world.</p>	72	<p><i>"I hope that the human being open up to the awareness that the environment is important and can act collectively, in solidarity, seeing the nature and the human being as one! One plus one is always more than two. We need more education to preserve the beautiful things of nature and life on Earth. If people have more respect for himself and for his neighbor, only then will be able to discover the value of living with others and with the world. And then we can all go together in brotherhood, each doing their part, totally changed and save the planet and make the earth a beautiful place to live! It is all ours! A sustainable world is possible if all cooperate. After all, we are part of the world and the attitudes of change must start with us and our home! Let's improve our lifestyle! That's important, urgent! Take the initiative! Let's do more! Think: the world is made by us ... and if it ever runs out, the blame will be ours."</i></p>
4	<p>Express awareness in relation to the challenges and possible solutions to achieve sustainability. Points out education as a requirement to get there. Reveals personal commitment and call for collective involvement and social and political solutions.</p>	69	<p><i>"It will take a lot of awareness and responsibility of everybody in order to achieve the sustainability of the planet and the management of natural resources with quality. Increased awareness means to stop the rampant consumption and generate less waste, less unnecessary rejects and more efficient processes. This way, everyone will have the basics for their subsistence, consuming sustainably: we have to think of our "needs": do we really need to spend a lot, having little money? We need to do a revolution that completely change the way we relate to the environment and that this change of mindset is only possible through educational policies involving all segments of society and the authorities investing in sustainable energy sources..."</i></p>
5	<p>This discourse consists only in listing some of the requirements to attain a sustainable</p>	15	<p><i>"Sustainability to Rio de Janeiro, sanitation, environmental conservation, recycling, natural resources management, clean energy, caring ,quality of life."</i></p>

	society		
6	Expresses an idealized vision of sustainability and its final line reveals a vision that considers our contemporary society as incompatible with sustainability.	2	<i>"I want a sustainable environment like they have in Spain. Or that the planet be again as it was in 1500.</i>

Conclusion

The exhibition was successful since it contributed to make the audience reflect on our pressing environmental issues, in some cases broadening their knowledge and increasing their awareness and in others challenging their previous concepts as expressed in their discourses. The Message in a Bottle interactive was a very interesting assessment tool, since it allows us to better understand our audience's knowledge, degree of awareness as well as their ideological stances and beliefs without testing them directly. This is a valuable strategy for informal learning settings as a museum, where a more direct assessment method could cause discomfort for an average visitor (National Research Council, 2009). This is especially true for school children who may feel like they will be graded for their performance and this may impair their museum experience. The data obtained by the CSD method are still being processed but the results already obtained suggest that it will be necessary a more intensive educational effort directed to increase environmental awareness in the Brazilian society.

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