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Solid waste management and environmental education from the perspective of workers of a cooperative recycling

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ABSTRACT

Before the exhaustion of natural resources, directly related to the disorderly growth of the cities, the lack of environmental awareness of its inhabitants and the mismanagement of solid waste produced, recycling is a process essential for sustainability. This research aimed to evaluate the perception of the community recycling cooperative in Jericó, in Triunfo/PE on the social, economic and environmental relevance of the activities they perform. To this end, questionnaires were applied with the social actors of this organization, as well as direct observation of the tasks carried out by them. While results, respondents stated that dealing with the recycling increased its interest on issues related to environmental education, as well as have come to understand the importance and consequences of the work they perform every day in the community where they live. The present study also revealed the contribution of cooperatives to promote recycling of local and sustainable development.

Keywords: sustainable local Development, garbage, recycling.

INTRODUCTION

According to Almeida (2012) the solid residue term, commonly called garbage, can be understood as all that is discarded by the people lack of usefulness, appearing generally in the solid state or semi-solid.

One of the main concerns related to the increased production of such waste is focused on

the harmful consequences that they can cause to human health and the quality of the environment (soil, water, air and landscapes) mainly when their destination is inadequate (DIAS, 2011; SANTOS, 2011; BRASIL, 2014).

In Brazil, although expressly prohibited by Law No. 12.305/2010, which established the National Policy on Solid Waste (MEDAUAR, 2015), most of this waste is still thrown in open

dumps, when the correct would refer them directly to landfills.

The National Policy on Solid Waste (Law No. 12.305/2010) back to the prevention and reduction of waste, proposing their recycling, their reuse and proper disposal of waste (BRASIL, 2015).

The solid waste management has been a challenge for municipalities, especially for those small, due to lack of resources and technical know-how (MILARÉ, 2011; SANTOS, 2011).

All this problematic situation reflects the use of natural resources as if they were infinite, without the least concern for the environmental impact that is generated. Also, the media and advertising influencing the consumer always to have a new product, throwing away the previous one and increasing waste production. This crisis imposes the need for new attitudes and actions guided by ethics and concern for the environment. That is, creating a healthier and more sustainable way of life, able to replace the old existing structures that reveal inappropriate (CAPRA, 2004; BRASIL & SANTOS, 2004; GOMES, 2006; DIAS 2011, BOFF, 2013).

The recycling cooperatives are presented today as one of the important tools for the management of solid waste. These organizations are associations of persons united voluntarily to achieve objectives in the economic, social and cultural area. Since this is often a democratic and collective creation that usually gives informally by its aggregates and ends up getting sometimes support of social and governmental institutions (MAGERA, 2003; RESENDE, 2013).

The need and the importance of recycling and selective garbage collection come from a

number of factors, among which: the exhaustion of raw materials (preserving and saving natural resources), rising costs of obtaining raw materials, energy saving, availability and rising costs of landfill, transport costs (logistics), pollution and damage to public health, income generation and employment and reduce production costs in general (MACEDO, 2000; WIEBECK & MAGDA, 2004; MANO, BONELI & PACHECO, 2005; VALLE, 2012; JACOBI, 2006; BENZENE, 2006; NEPOMUCENO NEPHEW, 2009; TONANI, 2011).

Recycling is the reuse of certain materials for both domestic use and for industrial use, in the case of an activity that, for some time, moves billions of dollars worldwide. There are currently two types of recycling: a primary or closed circuit – occurring when the waste is turned into new products of the same type – and the secondary, also called downcycling, wherein the waste materials are converted into products. The waste may also be classified into two types: the pre-consumption or internal, that is generated in the manufacturing process, and post-consumer or external, generated in product consumption (MILLER, 2007; TONANI, 2011).

The recycling cycle in Brazil has as main actors scavengers, the scrap dealers and industries. The former, although they are largely responsible for generating social, economic and environmental benefits on account of their work in collecting waste, they are still undervalued. Industries buy materials to scrap dealers, who own infrastructure and adequate equipment to provide large quantities and quality, unlike the collectors who are in different places, generally disorganized and unable to meet a high demand satisfactorily (AQUINO et al., 2009; RESENDE, 2013).

Recycling can be deployed in different locations ranging from schools to the big shopping centers and can serve as an efficient and effective methodology of environmental education, able to make people aware of the harmful impacts generated by the waste of natural resources and pollution caused by waste (SCHALCH et al., 2002; COELHO et al., 2010).

Environmental education has sought to transform the predominantly utilitarian view of many people over natural resources in attitudes, values and actions capable of fighting the accelerated environmental degradation process and promote quality of life (SATO, 2003; BRAZIL & SANTOS, 2004; BOFF, 2013).

To Seiffert (2010) environmental education should be seen as an indispensable tool for environmental management (in all its forms), aimed at the realization of the ideal sustainable development.

Therefore, the growing concern about a model of local and sustainable development has raised the importance of studies on the management of solid waste, their instruments, among them environmental education and its operators as recyclable material collectors. But do these people have the exact notion of the importance of their work to society?

In this sense, the present study aims to evaluate the perception of cooperative workers recycling of Jericó community in the municipality of Triunfo/PE on the social, economic and environmental relevance of the activities they perform on a daily basis in their respective communities.

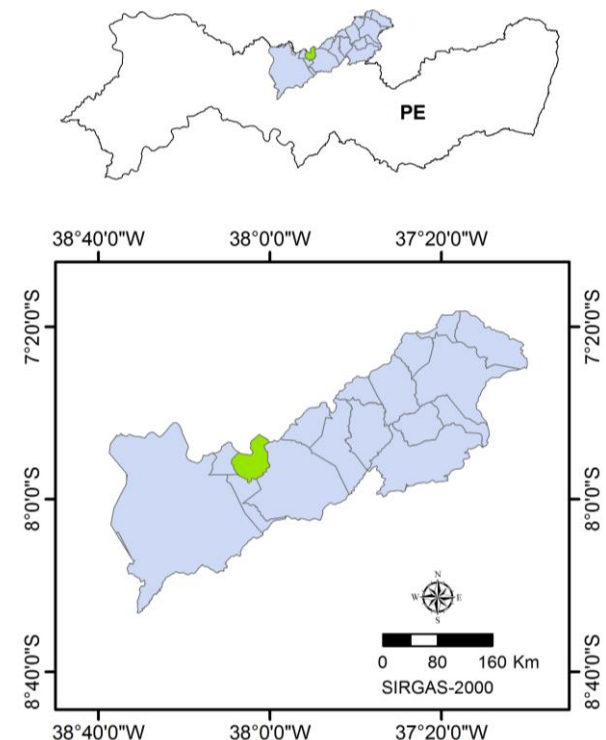
MATERIALS AND METHODS

The study was conducted in the cooperative recycling of solid waste of Jericó district of

Triunfo/PE, mesoregion Pernambucano Hinterland, microregion Pajeú, whose geographical coordinates are: 07° 77' 98" S 38° 02' 44" W (IBGE, 2014).

The municipality of Triunfo has a land area of 191.5 km², limited to the north with the state of Paraíba, the south with Calumbi, to the east with the municipality of Flores, to the west with the municipality of Santa Cruz da Baixa Verde. Its climate is Tropical Semiarid with an average temperature of 20,4°C and has a population of 15.006 inhabitants (IBGE, 2014) (Figure 1). But the Jericó district, where is located the object of this research organization, has a population of about 2.000 inhabitants.

Figure 1 – Representation of microregion Pajeú especially the city of Triunfo.



The study cooperative was founded in 2012, at the beginning counted on the participation of only six employees, but when this research already had thirty-four employees.

This research is classified as qualitative (as analyzing data), exploratory (as the ends), and how to research means a case study, which involved field research, direct observation and interviews with key actors working the cooperative studied (GIL, 2007; 2008). According to Yin (2005), the interest of this type of research is to study in depth and contextualized way a phenomenon in organizations.

The field work was developed in the period from June to August of 2014.

All thirty-four workers of the cooperative involved in the recycling project, identified as social actors responded to the survey questionnaire, and was preceded a semi-structured interview with the responsible for the organization (MARCONI & LAKATOS, 2011), in order to understand how it works and especially the perception of respondents on solid waste management and environmental education, as well as the social, environmental and economic activity that play.

Once collected, the data were analyzed following the guidelines Miles and Huberman (1994), cited in Gil (2008), which recommends that the qualitative data analysis is performed following steps: reduction, display and completion/verification.

The purpose of the research, its potential risks and benefits, as well as his own were explained to respondents, when the questionnaires. Stressing that they participated voluntarily and also had the opportunity to answer any questions at the time of data collection and, if they wished, they could also do it later seen since received contacts (email and phone) of responsible for the study.

RESULTS AND DISCUSSION

Of the 34 employees surveyed cooperative, 53% have age between 26 and 33 years old, 62% are female and 38% male.

According to the data obtained from the field research, all workers have demonstrated awareness of the importance be it economic, social and environmental recycling of solid waste. All of which reported that before working in this activity did not realize such relevance.

65% of respondents the main role of recycling is to help reduce the amount of waste in the community. Activity this which was also considered as a source of income and reuse what before had no face value. This demonstrates a clear understanding about the multiple benefits of recycling as emphasized by Nepomuceno Sobrinho (2009) and Tonani (2011). In addition, 79% of respondents consider as trash that which no longer serves for nothing and / or can be reused. Optical similar to that of Adams (2012).

An interesting finding was that even working in this field of activity, 88% of respondents do not separate trash in their own homes. And, paradoxically, despite not having much knowledge about what has to be selective collection (non-existent service in their municipality) all reported that this would facilitate the recycling process.

The main reasons attributed to the increasing amount of waste, from the perspective of respondents respectively are: population growth (26% of responses) and high production of disposable (53% of responses). What reveals the habits of contemporary society, also known as consumer society,

marked by unsustainable or incompatible values with a model of sustainable development, in congruence with the views of Capra (2004), Days (2011) and Boff (2013).

The data showed that 100% of respondents said that community trash is dumped in the open and/or burned, as the municipality has no landfill in disagreement with what determines the Law No. 12.305/2010 instituted the policy national Solid Waste. What it reveals the challenging situation faced by many municipalities, which do not conduct a proper management of this waste, either by lack of technical and/or infrastructure knowledge as described by Milaré (2011) and Santos (2011).

Regarding environmental education as an instrument of management of solid waste, 100% of respondents said that disseminate information about the importance of recycling where they live and work. Thus, in addition to contributing to the preservation of the environment, these people still carry information to their communities about the importance of their work. What reaffirms the understanding Coelho et al. (2010) about environmental education have on the recycling activity and its social actors important allies in spreading practices and habits more sustainable and healthy life.

Regarding the tasks they perform in the recycling plant, all employees received guidance from the charge of the enterprise on working with the garbage and what equipment is required for handling.

According to the responsible for the cooperative, plastic is the only recycled material by the organization today.

On the steps of the production process in the recycling plant, it was found that the waste is

delivered in plastic bags. And even on the outside of the cooperative, there shall be an initial selection of the material received. Then he is taken to a cabin and separate. Following deposited in a tank where it is washed and residues are removed. It is then put to dry, and finally minced, being able to be sent to the other (s) industry (ies) and result in new objects.

It is evident, therefore, that without the existence of a recycling plant there would be no adequately meet the demands of potential customers, confirming the socio-economic importance of the organization of collectors in duly legalized cooperatives, as described in this study by Aquino et al. (2009) and Resende (2013).

The analysis of the speech of the responsible cooperative, it is inferred that in his view, the waste are leftovers or remnants that people discard on a daily basis. What shows a similar design to the other workers of the plant and the de Almeida (2012), which defined solid waste as all that is ruled by the people due to lack of use.

At another point, the respondent made clear his view that recycling is important because it helps to raise awareness about the recycling of solid waste and to give importance to issues related to the environment. It is inferred, then, that he has an understanding that is not restricted to the economic potential of recycling, but also its social and environmental relevance, including how environmental education tool, according to the aforementioned visions of Schalch et al. (2002) and Coelho et al. (2010). It should be noted that the cooperative, from the perspective of interviewed workers learn to properly separate the trash, and become aware about the final destination of much of it, as they receive information on sustainable development

and preservation of the environment (environmental education).

The respondent complained that, to date, the municipal public power did not comment as to establish a partnership, believing it would be a good alternative for both parties. He concluded stressing that the contribution that the cooperative/recycling plant gives to the community is to improve their standard of living, with the removal of garbage from streets and income for workers. And therefore, the population now has a different conception of the social, economic and environmental solid waste. Or, in other words, people start to rethink their values, reviewing merely utilitarian and anthropocentric practices, giving chance to lifestyle guided by sustainability, taking into account the proposals for a new development model advocated by authors such as Boff (2013), Capra (2004) and Dias (2011).

CONCLUSIONS

It was found that the respondents are aware of what environmental education and even use it in their daily lives, as an instrument of management of solid waste.

It was found that the selective collection plays an important role in the lives of these workers, who consider solid waste synonymously reuse and source of income.

It was evident that the cooperative recycling is an extremely important project for the lives of these people and to the local community.

The following are listed other findings and contributions of this study, namely:

- a) Provide an appropriate destination to waste is one of the great challenges of public administration not only in Brazil but

all over the world. Currently, it is buy more manufactured products than at other times, including food and beverage, exponentially increasing the production of waste in the localities. Although some communities have already discovered how to turn "worthless objects" in a good deal, there is still a long way to go, especially in small cities.

- b) The participants have demonstrated knowledge of issues related to environmental education and preservation of the environment, and declared to be of great importance to waste separation to facilitate the recycling process.
- c) The idea that workers had about the garbage was changed after they understand that once through the recycling process the solid waste may give rise to new and useful things, being a source of income for their families. Taking into account that workers spread in the communities where they live information about their work, they help to change the pejorative concept that many people still have about the waste; as well as reinforce the message of environmental preservation. It is always important to encourage the separation and recycling of waste, as well as commitment to the environment, which are all part, regardless of the social and economic context in which they are inserted.
- d) The implementation of cooperative recycling was a way to awaken the local population to environmental issues. Such organizations, in addition to reducing the amount of solid waste from localities,

generate a source of income for working families to the collection and recycling of such waste and arouse interest in the community about the importance of proper disposal of produced waste.

e) a) In Jericó village in Triunfo/PE, similar to what occurs in several other locations in Brazil, most of the waste is deposited in the open, contrary to what determines the National Policy of Waste Solids, thus contributing to increase the pollution of soil, air and water and causing diseases. Thus, it becomes necessary to create other projects related to solid waste management, such as the implementation of selective collection, which would help to keep the cleaner communities. Moreover, the separation of materials that could prove to be reused facilitate the work of local garbage collectors, contributing thus to the preservation of natural resources.

Finally, this study reached its primary purpose to certify that the cooperative workers recycling of Jericho community in Triunfo / PE understand the socio-economic and environmental relevance of the activities they carry out.

It is suggested to carry out further studies, aimed at deepening reflections on the cooperative's role in the management of solid waste and its relation to the promotion of sustainable local development.

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