

Evaluation system waste management: a case study in a public school in the Seridó/RN region

Avaliação do sistema de gerenciamento de resíduos sólidos: estudo de caso em uma escola pública na região Seridó/RN

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Resumo

Este trabalho tem como objetivo realizar uma avaliação do atual sistema de gerenciamento dos resíduos empregado por uma escola pública no município de Parelhas/RN. Para realização da pesquisa, foi realizada entrevista com a gestão escolar, seguida da observação das etapas de manejo dos resíduos para entendimento e quantificação do gerenciamento no período entre junho-dezembro de 2017. A técnica de pesquisa foi a observação sistemática e direta intensiva. De acordo com a observação, grande parcela dos resíduos são orgânicos, seguidos de secos, equipamentos elétricos e eletrônicos, construção e demolição e outros resíduos. Quanto ao gerenciamento, o acondicionamento dos resíduos é feito em recipientes plástico, parcialmente protegido das intempéries, com separação dos resíduos. A sinalização dos recipientes estava adequada, assim como os locais nos quais estavam dispostos. A principal destinação final dos resíduos é o sistema de gerenciamento público, entretanto foram observadas ações de tratamento, como a realização da compostagem de parte dos resíduos orgânicos para manutenção da horta escolar, destinação de resíduos à associação de catadores, reaproveitamento de peças e realização de permutas entre repartições públicas. Por fim, verificou-se que o sistema de gerenciamento da escola está bem direcionado, ainda que haja necessidade de pequenos ajustes.

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Palavras-chave: Resíduos secos; Resíduos orgânicos; Resíduos eletrônicos; Resíduos de construção e demolição.

Abstract

This work aims to evaluate the current waste management system employed by a public school in the municipality of Parelhas/RN. It was performed an interview with the school management, followed by observation of waste management steps to understand and quantify management in the period between June-December 2017. The research technique was a systematic and direct intensive observation. According to the inspection, much of the waste is organic, followed by dry, electrical and electronic equipment, construction and demolition, and others. As for management, the packaging of waste is done in plastic containers, partially protected from the weather, with separation of waste. The signage of the containers was adequate, as were the locations in which they were arranged. The leading final destination of the waste is the public management system, however, treatment actions were observed, such as the composting of part of the organic waste for the maintenance of the school garden, the destination of waste to the collector's association, the reuse of components and the accomplishment of exchanges between public offices. Finally, it was found that the school management system is well-targeted, even if minor adjustments are required.

Keywords: Dry waste; Organic waste; Electronic waste; Construction and demolition waste.

1. Introduction

In antiquity, the waste from human activities was thrown into nature without any significant consequences, considering that the interaction between man and nature was within the limits of environmental resilience. However, over time, mainly with the population growth and the formation of the urban conglomerates, the generation of the waste increased vertiginously, causing the first environmental problems (DANTAS et al., 2017a). With the expansion of the capitalist model of economic growth experienced by Earth since the industrial age, the generation of waste has been intensified exponentially overcoming the capacity of the environment depuration and, consequently, producing severe imbalances to natural systems (GOUVEIA, 2012; DANTAS et al., 2018). These imbalances can be identified in the observation of urban spaces, around and within cities (CRUZ; DANTAS; RAMOS, 2019).

Indeed, the deepening of environmental disorders, resulting from the anthropic pressures of generation and the environmentally inappropriate final disposal of Solid Urban Waste (SUW), caused intense concern among researchers in this area who, aware of the future consequences, carried out several alerts and prepared conferences to guide the environmental policies of the countries of the globe, especially those potential generators of large volumes of SUW.

In this sense, the great "watershed" was the first major conference on environmental issues entitled the 1st United Nations Conference on the Environment held in 1972 in Stockholm, the capital of Sweden. At that conference, this discussion gained solidity, mainly from the control of the emission of Greenhouse Gases (GHGs) to the Earth's atmosphere in the Stockholm Declaration, a document resulting from this conference (BARRETO, CUNHA, 2016). This document guided the actions of governments participating in the Stockholm Conference about laws, policies, and instruments to achieve the reduction of GHG emissions into the atmosphere.

In Brazil, the National Environmental Policy (NEP), established by Law 6,938/1981, was the starting point towards environmental control (BRASIL, 1981). Another advance in this sense was the Federal Constitution (FC) of 1988. The 1988 FC presents in Chapter VI- Environment, Article 225: "Everyone has the right to an ecologically balanced environment,

a good common use of the people and essential to a healthy quality of life, imposing on the public power and the community the duty to defend and preserve it for present and future generations" (BRAZIL, 1988b, Art 225), so that the main public instrument is the promotion of "environmental education at all levels of education and public awareness for the preservation of the environment" (BRAZIL, 1988b, Art. 225). In addition to legal progress on environmental issues about NEP, for FC-1988 and subsequently, at the United Nations Conference on Environment and Development (UNCED-1992), the most important landmark in the field of Management of the SUW is a Law 12,305 of 2010.

This Law establishes the National Solid Waste Policy (NSWP). The NSWP brought important SUW management devices, among them, the shared responsibility of governments, companies, and society for the generation of waste. Among the instruments, we highlight the responsibility for the product life cycle, which includes reverse logistics and selective collection systems so that, together, they can promote recycling and reuse among others (BRASIL, 2010). As a result, cooperatives and associations of collectors of recyclable materials appear with the aim of re-signifying "garbage" in material endowed with economic value (FERREIRA; CRUVINEL; COSTA, 2014).

As for SUW unrestrained of reintegration into the productive chain, the NSWP denominates them as tailings and must have environmentally adequate disposal, that is, disposed of in sanitary landfills. According to the aforementioned policy, landfills should have been built by municipalities or municipal consortia by the end of 2014. However, given the inability of governments, the term was extended to the 2019-2021 interstice due to the range of inhabitants. PLS 425 determined the closure and operation of landfills in the following conditions: by 2019 for municipalities with more than 100 thousand inhabitants, 2020 for municipalities between 50 and 100 thousand inhabitants and 2021 for municipalities with less than 50 thousand inhabitants (SENADO, 2017). All these elements provided for by the NSWP must be included in the Integrated Management Plans of the SUW (BRASIL, 2010).

Another component of the problem is the composition of waste generated in the country. Nonetheless, Brazil is part of this problem of producing large volumes of solid

waste. According to the panorama published by the Brazilian Association of Public Cleaning and Special Waste Companies (ABRELPE) annually in 2017, the amount of solid waste generated in Brazil was about 78.4 million tons, to represent an average of 214,868 tons per day of SUW, with per capita production of 1,035 kg.people/day. In addition to the volume of waste generated, there is inadequate management, especially with the final destination environmentally inappropriate. In this sense, still according to Abrelpe data, 40.9% of the SUW generated in the country had their destination inadequately carried out (ABRELPE, 2016). Besides the large volume of generation, another component of this problem is a very heterogeneous composition of SUW.

According to the Brazilian Association of Technical Standards (ABNT) NBR 10,004, solid waste can be classified into two types: Class I - Hazardous Waste and Class II Waste - Non - hazardous. Class II waste can be divided into: Class II-A (Non-inert waste) and Class II-B (Inert waste). Class I wastes are those that present hazards, such as flammability, corrosivity, reactivity, toxicity, pathogenicity. Class II-A wastes are those that do not fit into the classifications of class I wastes - Hazardous or class II B wastes - Inert. They have characteristics of water solubility, biodegradability, combustibility. While Class II-B Wastes are those that do not solubilize when in dynamic contact with water (ABNT, 2004a).

In this sense, the problem of SUW management covers all segments of society. In public institutions, more specifically, in educational institutions, there is a lack of consistent mechanisms to address this issue. However, this problem must be seen as an environmental and economic opportunity, since it has seen the high added value that these materials possess. Waste, when properly treated, can be reinserted into the productive process, or else receive other purposes, generating an economic gain for those involved. DANTAS et al., 2006). To achieve this potential, institutions should develop and implement effective and efficient management systems for the management of these materials, from separation, through conditioning, collection, transport, treatment, and environmental disposal (DANTAS et al. 2017a; MERSONI; REICHERT, 2017).

Therefore, it is important that educational institutions be included in this problem, developing their own management systems, since, for Geng et al. (2013), institutions are like small communities, where there is a large generation of different types of waste. In addition,

the author also considers that each educational institution should strive to seek support from the academic community, taking into account its specificities such as cultural habits, geographical location, courses offered among other issues (GENG et al., 2013).

In the State of Rio Grande do Norte, there are some structural obstacles to the implementation and operation of management systems in public departments. The first obstacle is political-legal, since the State Plan for the Integrated Management of Solid Waste (RIO GRANDE DO NORTE, 2012), despite having been prepared in 2012, it does not have instructions directed to public offices, especially public teaching. In 2016, State Law No. 10,077/2016 was sanctioned, which allows the disposal of waste to organizations of recyclable waste pickers (RIO GRANDE DO NORTE, 2016). Another problem is economical since most schools and departments do not have their resources to fund actions in this direction.

Concerning to the waste management systems in educational institutions, such as public schools, adding the developing policies that address this issue, this work aims to evaluate the current management system waste used by a public school in the municipality of Parelhas, in the state of Rio Grande do Norte.

2 Methodology

2.1. Study area

The research was carried out in a Public School of primary and secondary education, of the jurisdiction of the State Government of Rio Grande do Norte, located in the municipality of Parelhas. The municipality of Parelhas (Figure 1) is located in the Seridó region, the microregion of eastern Seridó. It is limited to the cities of Carnaúba dos Dantas, Santana do Seridó, Ecuador and Jardim do Seridó. The distance from the state capital is 245.4 km. The estimated population is 21,669 inhabitants (IBGE, 2017).

Figure 1 - Geographical location of the Parelhas/RN



Google Earth (2019).

2.2 Research procedures

The research was carried out between June and December 2017, through the observation of the waste management procedure generated at the school and, later, a structured interview with the school director. The first stage of the research was developed between June 06 to 10, of an exploratory nature. On the first day on June 6, 2017, the manager was asked to be allowed to carry out this research and after positive signaling, a brief explanation was requested about the waste generated at the school. In the following days of this week, the systematic observation of waste management was carried out, from the generation, through conditioning, treatment techniques, and final destination. Also, all

the sites for the generation and final destination of these wastes were visited, both in the school garden and in the place where the waste electrical and electronic equipment was stored, located on the premises of the school itself.

An important step was to perform the gravimetric composition of the residues, so a weekly visit schedule was adopted to enable real collection and obtain accurate information. The school has already surveyed dry and organic residues; however, the remaining residues still did not have enough information to elaborate on their gravimetric composition. The schedule of weekly visits started on August 10 and ended on November 20. In addition to this, we adopted a variation of the collection shifts and the days of the week, in order to predict eventualities between the days.

On the last day on December 12, 2017, already in possession of the tabulation of data collected during the four months, a structured interview was conducted with the school director, aim to ratify the information observed or to collect anonymous information after the period of diagnosis. The interview focused on the waste management system generated at the school, based on questions about the quantification of waste generated, management, treatment practices, waste reduction and those responsible for managing them.

As methodological artifices, the techniques of Direct Intensive Observation and Systematic Observation (MARCONI; LAKATOS, 2010) were adopted. Intensive Direct Observation was chosen because of this technique to use data collection instruments, focused on the conversation of the researched/researcher that are more appropriate to the understanding of this question, to the detriment of the simple application of questionnaire or form. In addition to this, Systematic Observation was used because it was able to capture phenomena within specific planning and objective (MARCONI; LAKATOS, 2010).

3. Results and discussion

3.1 Gravimetric composition of generated waste

Figure 2 and Table 1 denote the gravimetric composition obtained during the study period. It is valid to affirm that the accomplishment of the gravimetric study is the first step

to elaborate a system of successful management. Vega and collaborators (2008) deepen a discussion, stating that, based on the characterization of waste, it is possible to estimate recovered materials and identify sources of component generation. According to the authors, the characterization provides essential information for the development of industrial processing machines and allows the development of a management system following current legal documents.

Concerning Figure 2, it is observed that the largest proportion of waste is of an organic nature. Among the organic waste, the food /snack corresponds to a more significant portion. The percentages are justified by the high amount of food prepared each school day, bring snacks in the intervals of the morning and afternoon shifts and the preparation of lunch for the students of Programa Mais Educação.

The dry waste corresponds to 21% of the waste generated in said school. Among the main generations are paper and plastic. Gallardo et al. (2016), when evaluating the waste generated at the Jaime I University (UJI), located in Castellón de La Plana, Spain, found that paper and plastic are the dry waste with the highest proportion of generation. While Juliatto et al. (2011) also observed that plastic and paper were the most generated waste on the UFSC campus. Therefore, it is observed that these results are in accordance with the waste generated in the various public educational institutions. Regarding the proportions, the waste presented values below the national average, since according to the IPEA, 31.9% are dry waste. Then the values are higher than those found in this study (IPEA, 2012).

Regarding the Electrical and Electronic Equipment Waste (WEEE), Souza, Soares, and Lucas (2017) obtained in their studies a similar composition, so that the stabilizers corresponded to the most significant quantity of WEEE. Construction and demolition wastes (WCD) accounted for 11% of the total, being Class A waste, according to CONAMA Resolution No. 307 (BRAZIL, 2002). According to Oliveira et al. (2016) and Silva, Santos, and Araújo (2017), the higher the WCD generated are Class A waste. Finally, the other waste is preferably broken lamp waste, followed by styrofoam, chemically derivatized products, and batteries, corresponding to 5.5% of the total waste generated.

Figure 2 - Gravimetric of waste generated at the educational institution

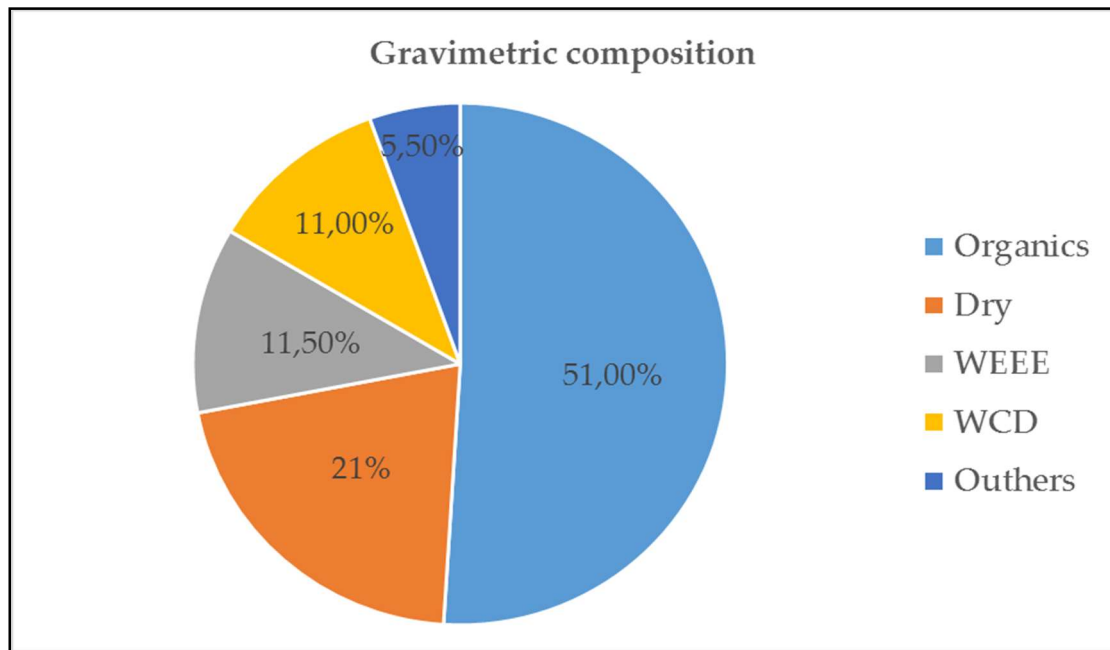


Table 1 - Detail of the gravimetric composition of the generated wastes

Orgânico (%)		Dry (%)		WEEE (%)		WCD (%)		Others (%)	
School lunch	63	Paper	51	Stabilizers	38	Cement materials	30	Lamps	59
Pruning	20	Plastic	35	Data show	3	Pipes	21	Styrofoam	30
Perishable	10	Metal	10	Nobreaks	15	Bathroom Accessories	13	Chemical products	8
Oils	7	Glass	4	Printer	6	Paints and Solvents	12	Batteries	3
				Wire and conduits	7	Tiles and bricks	11		
				Monitors	9	Wood	8		
				CPUs	13	White ceramic	5		
				Keyboards	9				

3.2 Packaging and Signaling

Regarding packaging, the residues have different types of accommodation. For dry waste, the school has two sets of conditioning boxes located strategically in the schoolyard. These two sets consist of five conditioners, one for each type of dry waste (paper, plastic, metal, and glass) and organic, in the standard colors: blue for paper, red for plastic, brown for organic, green for glass and yellow for metal. The packaging is done in a partially correct manner, so two of the ten conditioners are with broken lacquering covers, so, on rainy days, are with the dry components are deteriorated by moisture. Regarding the signage, in addition to the colors, the boxes are marked with the visible names of each type of dry waste, facilitating correct use.

Concerning the organic waste generated by the snack, there is a specific deposit for its provisional packaging, so that in each of the working shifts, the waste is collected, sorted and taken to the composting shelter. In contrast, the waste oils are bottled in Polyethylene Terephthalate (PET) bottles. According to Santos et al. (2014), composting is a fundamental tool for the disposal of organic waste, acting on two fronts: it reduces the number of fertilizers as agricultural productivity increases, as well as correctly allocates organic waste.

There is a problem in this system since the waste is not separated during its collection, causing damage to composting in some days, since on the days that the lunch contains the addition of oils, the waste from it cannot be directed to composting. According to Orrico Júnior (2010), excessively oily foods, meat, fish remains, poultry should be avoided in composting, as oils from short-chain organic acids, such as acetic acid, resulting from the breakdown of oil chains, while the rest reduces the C/N ratio, in addition to attracting the presence of mice and insects. As for pruning and construction waste and civil demolition, these are directed to the two stationary boxes located on the outer side of the School, duly signalized.

Regarding waste electrical and electronic equipment, these are sent to a reserved room with restricted access at the school for this purpose. Then they are separated, cataloged and stacked under a ballast of approximately 10 cm. The area has windows and ventilation, favoring the extension of the useful life of the equipment that has the potential for reuse. According to Farias et al. (2018), this type of packaging is adequate, however,

difficult to find in public institutions, given the difficulties presented by public institutions in carrying out the proper management of these wastes, whether due to budget issues, server shortages or for lack of awareness.

According to Adeniran, Nubi, and Adelo (2017), the educational institution is playing a fundamental role in the community, contributing to reflection on sustainable development, which is linked in the leading international documents, especially those resulting from environmental conferences.

Finally, other wastes are provisionally packed, without any attempt at treatment. The lamps and batteries are packed in boxes temporarily on high ballast and sheltered from the elements, awaiting opportunities to return to the manufacturers or eventually taken by the municipal collection.

3.3. Treatment and Final Destination

Due to the varied typology waste generated within this school community, there are several ways of treatment and final disposal of waste. Organic waste, other than tree pruning, receives its treatment as it is collected from the temporary storage shelter and taken to the composting shelter. At this stage, foods resulting from leftovers and perishability of the snack are sorted, arranged in the compost heaps, and directed, after a set time, to a vegetable garden located in the school property.

Horta Escolar is a program developed by the management team, in order to ally environmental practice, social, economic and educational issues, so that the students themselves, with the supervision of a server and pedagogical support, are protagonists for the maintenance of this garden. The main vegetables produced are crisp lettuce, kale, cherry tomatoes, coriander, onions, and chives. These products cater to school meals. Silva et al. (2015) and Silva et al. (2016) agree with school garden programs and affirm that these have been essential tools for converging curricular and extracurricular contents within the school, as well as problematizing issues of the global context from the local, the exercise and the construction citizen of each student. Böhm et al. (2017) add that it is a fundamental practice for environmental awareness and education.

Dry waste also has an attractive environmental alternative. The waste, already sorted due to its disposal, signage and correct packaging, is destined to the association of recyclable material collectors installed in the municipality, thus carrying out an environmental practice of relevant socioeconomic interest, since, Ferreira, Cruvinel and Costa (2014) redefines "garbage" in material with economic value. In addition, Dantas et al. (2017b), who studied the association receiving the waste from this school, found that, in addition to the high unhealthiness that the collectors of this association are subject to, low incomes are an intense obstacle to maintaining the association and therefore already separated for the association is substantially remarkable. In the legal sphere, this environmental practice is a prerogative established by State Law 10,077/2016 (RIO GRANDE DO NORTE, 2016). Aforementioned the Law, in its Article 1, it defines:

"The separation of recyclable waste discarded by the organs and entities of the state public administration in the generating source can be destined to the associations and cooperatives of the collectors of recyclable materials (selective solidary collection), within the scope of programs of incentive to these entities." (RIO GRANDE DO NORTE, 2016, Art. 1).

Therefore, it is permissible to say that the school has adopted practices in accordance with the State Law. Although State legislation is late in this regard, since at the Federal level this practice has been regulated since 2006 by Federal Decree No. 5,940 (BRAZIL, 2006), it is considered an advance in terms of waste management by the States of the Union. Another critical point is that these practices cover practically all dry and organic waste, except pruning wastes, oils and sporadically, oily snacks, directing a high percentage of waste generated for the appropriate treatment/disposal. However, mentioned the director of the school, these environmental practices are only possible due to the work of environmental education inserted in the pedagogical actions of the school, including added in its Political Pedagogical Project.

According to the director, although the school does not have the discipline of environmental education, the themes are worked on in the disciplines of geography and biology. In addition to this, adjacent practices are held, such as monthly lectures with various

professionals, to discuss the problems caused by environmental degradation and desertification of the region resulting from inadequate waste management. Other subjects are also objects of study, such as the issue of the release of carbon dioxide by the local ceramic industry, the issue of drought and desertification, the devastation of the caatinga, the issue of sanitation, among others. Another interesting practice is the environmental gincanas carried out with the students, aimed at attenuating some localized problem located in the community in which the school is inserted, such as the fight against the proliferation of the mosquito *Aedes Aegypti*.

The school waste management system also contains instruments for the treatment and final disposal of waste electrical and electronic equipment. These wastes already receive correct packaging, including signage, cataloging, reserved environment, ventilated and elevation. As treatment measures, the management system provides for three actions: reuse of materials, donation between public agencies, disassembly and assembling.

The first measure is to reuse materials, in this system, computer parts, for example, are used for the repair of new machines. Once all the possibilities of reintegration have been exhausted, the exchange or donation between public agencies is carried out, similarly to what happens in the offices of the union according to Normative Instruction 205 of April 08, 1988 (BRASIL, 1988a), since there is no legal instrument of this environmental alternative. This practice has the objective of rationalizing and minimizing costs, since many pieces that are not being useful for school can be used in the equipment of another state public office, based on the NEP input/output principle. Finally, wastes that were not viable to be reused and donated are arranged and left in the private room until another destination is defined.

The absence of alternatives by the municipal public authority and the companies regarding waste WEEE is worrying and is dissuading several sections of the National Environment Council,, as well as the NSWP, especially in Article 33 of the aforementioned policy, whose determination deals with the responsibility of generating companies the obligation to structure reverse logistics systems (BRASIL, 2010). The concern with this waste is because they are difficult to handle, especially treatment and final destination environmentally appropriate, due to their dangerous composition and volume of the

generation that grows year after year (ARAÚJO et al., 2012; RODRIGUES; GUNTHER BOSCOV, 2015; PANIZZON; REICHERT; SCHNEIDER, 2017).

The composition of such equipment usually features elements such as cadmium, mercury, arsenic, and lead. Nevertheless, the Brazilian Association of Technical Standards (ABNT), through NBR 10.004, in 2004, classifies these wastes as Class I - Hazardous Waste (ABNT, 2004a). According to the Brazilian Association of the Electrical and Electronic Industry (ABINEE, 2017), these elements can cause severe damage to human health. Cadmium can lead to kidney dysfunction. Mercury can cause neuropsychiatric disorders. Lead, psychomotor and neuromuscular functions. Recently, arsenic has been classified as carcinogenic, especially with skin and bronchial cancer (ABINEE, 2017).

Inadequate disposal promotes the contact of these elements with the environmental systems so that these substances penetrate the soil and groundwater contaminating so much soil, air, water, biota, and consequently, the human being. Therefore, the municipality needs to develop consistent and structural alternatives to attenuate environmental damage, recovering and reinserting materials in the production chain and, above all, people's lives (FARIAS et al., 2018). In this context, researchers have recently investigated environmental alternatives and technologies that are capable of recovering the heavy metals present in WEEE (AVARMAA; YLIAHO; TASKINEN, 2018).

The WCD is tended for the public collection of waste. The public car collector takes this waste to the construction landfills, located in areas near the municipal dump. The other wastes are stored in boxes and remain packed together with the WEEE until another destination is defined.

It should be emphasized that, although the school is concerned about conditioning, signaling, disposing and allocating adequately to the public management system, the municipality does not have an adequate allocation of both WEEE and WCD. In the city in question, the waste is destined to a municipal dump, without any control or selection of the materials, protection of the soil against the infiltration or percolation of the leachate or any environmental alternative of protection of the systems or waste treatment urban solids in dissonance of the National Solid Waste Policy, established by Federal Law 12,305/2010. The

NSWP foresees the closure of the dumps, in the same step in which it elects the sanitary landfills as the adequate disposition of the wastes (BRASIL, 2010).

As for the WCD, there are regulations such as NBR 15112, 15113 and 15114 that regulate solid waste sorting process (ATTs), construction landfills and recycling areas, and guide managers in the elaboration of municipal management policies. (2003), the role of decision-making power (ABNT, 2004b; ABNT, 2004c; ABNT, 2004d; DANTAS et al., 2017). Concerning other waste, another major problem, and challenge on the part of municipal management. These types of wastes are classified as Hazardous Waste by NBR 10,004 because of their composition of heavy metal contents. Therefore, they should not be destined to unprotected soils and should receive adequate management, according to CONAMA Resolution No. 401/2008 (BRAZIL, 2008). The risks of the indiscriminate disposal of tailings in the soil are mainly associated with the transport of pollutants by the infiltration of percolated liquids, responsible for the contamination of the subsoil and the groundwater in the disposal sites (NOBILE et al., 2011).

4. Conclusion

Therefore, considering the study about the management of the school, some relevant points were identified. In general, the waste management system is adequate under the aegis of the Brazilian legal documents and the State of Rio Grande do Norte. Management practices were also positive, both related to quantification, packaging, signaling, collection, transport, treatment, and final destination.

Among the challenges, some problems were observed in the packaging, especially the protection of the containers from the weather. In terms of signaling, it must be written in each container, in addition to using colors, for recognition of those generators that are unaware of the symbolic colors. The final destination is frail since the municipal government does not have the landfill, either under its exclusive operation or in an inter-municipal consortium with the surrounding municipalities. Thus, part of the waste generated in the school is sent to a final destination environmentally inadequate, being taken to the municipal dump.

As for the treatment, good alternatives were perceived. The composting initiative, combined with the creation and maintenance of a school garden, cared for by the students themselves, proved to be an alternative treatment and environmental education, strengthening the student's bond with the environment in which he is inserted. Another positive point is the proper separation and allocation of dry waste for the organization of recyclable waste pickers, ratifying the practice of environmental education, as well as having a socio-economic character, since, besides promoting income to the collector, it is an inclusive practice.

Finally, it is suggested that the school maintains its management system in order to be permanently in monitoring, correcting future problems and broadening environmental practices through the inclusion of students, driven, above all, by environmental education.

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