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*ENVIRONMENTAL EDUCATION AND MECHANIZED SELECTIVE
COLLECTION IN VILHENA: ASSESSING THE EFFECTIVENESS OF SAAE'S
ACTIONS IN THE UNIR ACADEMIC COMMUNITY¹*

**EDUCAÇÃO AMBIENTAL E COLETA SELETIVA MECANIZADA EM
VILHENA: AVALIAÇÃO DA EFICIÊNCIA DAS AÇÕES DO SAAE NA
COMUNIDADE ACADÊMICA DA UNIR**

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ABSTRACT

The general objective of this research is to analyze the scope of environmental education actions carried out with the Federal University of Rondônia Foundation (UNIR), Vilhena Campus, in the context of implementing mechanized selective collection in the municipality of Vilhena/RO. The work is justified not only by the importance of the theme but also because Vilhena is the first municipality in the North Region of Brazil to implement the CSM (Mechanized Selective Collection), bringing visibility not only to the state but also to the local community. Regarding the methodology: concerning its nature, it is applied; concerning the approach, it is qualitative-quantitative; concerning the objectives, it is descriptive; concerning the procedures, it is a case study using documentary and bibliographic sources. It also utilizes survey research (questionnaire), and the content analysis and triangulation methods were used for data analysis. The results demonstrated that the environmental education actions carried out by SAAE (Serviço Autônomo de Água e Esgotos) reached a small portion of the UNIR academic community, being inefficient and often nonexistent among the Vilhenense community, which lacks environmental education actions.

Keywords: mechanized selective collection, selective collection, environmental education, UNIR.

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RESUMO

O objetivo geral desta pesquisa é analisar o alcance das ações de educação ambiental junto à Fundação Universidade Federal de Rondônia (UNIR), *Campus Vilhena*, no contexto da implantação da coleta seletiva mecanizada no município de Vilhena/RO. O trabalho se justifica não apenas pela importância do tema, mas também por Vilhena ser o primeiro município da Região Norte do Brasil a implantar a CSM, trazendo visibilidade não apenas para o estado, mas para a comunidade local. Referente à metodologia: quanto à natureza é aplicada; quanto à abordagem é quali-quantitativa; quanto aos objetivos é descritiva; quanto aos procedimentos, trata-se de um estudo de caso com fontes documentais e bibliográficas. Utiliza ainda a pesquisa com *survey* (questionário), e para a análise de dados foi utilizado o método da análise de conteúdo e da triangulação. Os resultados demonstraram que as ações de educação ambiental realizadas pelo SAAE atingiram uma pequena parcela da comunidade acadêmica da UNIR, sendo ineficiente e muitas vezes inexistente perante a comunidade vilhenense, que carece de ações de educação ambiental.

Palavras-chave: coleta seletiva mecanizada, coleta seletiva, educação ambiental, UNIR.

INTRODUCTION

In Brazil, as in various parts of the world, there has been a significant increase in the production of solid waste, driven by accelerated urbanization and the growing consumption of disposable products. This scenario has transformed waste management into a global-scale problem, considering that a large portion of waste is improperly discarded, without treatment or proper disposal.

The implementation of the National Solid Waste Policy (PNRS), established by Law No. 12,305/2010, represented an important milestone in this context. The legislation aims not only to prevent and reduce waste generation, but also to promote practices such as reuse, recycling, treatment, and environmentally appropriate final disposal of rejects. By structuring solid waste management, the PNRS also seeks to encourage environmental awareness through coordinated actions at the municipal and individual levels.



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For selective waste collection programs to be effective, it is necessary that, in addition to municipal management, citizens be engaged, and for this purpose environmental education actions must take place to raise awareness and encourage the development of critical thinking focused on environmental practices (Guerrero; Maas; Hogland, 2013).

In 1999, Brazil established the National Environmental Education Policy (PNEA), which regulates the implementation of environmental educational actions at all levels and modalities of the educational process, marking a significant advance in building a more sustainable future.

In order to comply with the guidelines of the National Solid Waste Policy (PNRS), the Municipal Integrated Solid Waste Management Plan of the Municipality of Vilhena (PLAMRESOLV) was developed. This plan established targets for the implementation of selective waste collection and, in accordance with its guidelines, an agreement was signed with the Ministry of the Environment (MMA), joining the National Zero Dumps Program. As a result, mechanized selective waste collection was implemented in the municipality in April 2022.

The objective of this research is to analyze the impact of the environmental education actions carried out by the Autonomous Water and Sewage Service (SAAE) at the Federal University of Rondônia Foundation (UNIR), Vilhena Campus, in the context of the implementation of Mechanized Selective Waste Collection (CSM) in Vilhena/RO.

This study is justified by addressing a topic of great relevance. In addition, Vilhena stands out as the first municipality in the Northern Region of Brazil to implement mechanized selective waste collection, which gives visibility to both the state of Rondônia and the city of Vilhena. Locally, the initiative has a direct impact on the Vilhena community. Thus, the scope of the environmental education actions promoted by SAAE at UNIR and how they influenced the implementation of CSM in the municipality will be analyzed.



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THEORETICAL FRAMEWORK

Environmental education (EE)

The first time the term “environmental education” was used, according to Gayford and Dorion (1994) *apud* Sato (1997), was in 1965, by the Royal Society of London, an institution dedicated to the promotion of scientific knowledge; the term referred to the idea of preserving life systems. Years later, in 1977, the first conference on environmental education took place in Tbilisi, Georgia, former Soviet Union, the Intergovernmental Conference on Environmental Education, resulting from a partnership between the UN and the United Nations Educational, Scientific and Cultural Organization (UNESCO). At the Conference, objectives, definitions, principles, and strategies for EE were formulated (Oliveira et al., 2017; Sato, 1997).

In Brazil, one of the most important meetings related to EE took place in Joinville/SC in 2006, at the 5th Ibero-American Congress on Environmental Education, which fostered various discussions in working groups and broad dissemination of projects and research in the field of EE (Philippi Jr.; Pelicioni, 2014).

In 2007, the 4th International Conference on Environmental Education (Tbilisi+30) took place in Ahmedabad, India, marking the 10th anniversary of the first conference on EE. The declaration resulting from the event states that “environmental education supports and endorses education for sustainable development” (Philippi Jr.; Pelicioni, 2014, p. 438).

In this article, Environmental Education will be understood according to the National Environmental Education Policy (PNEA), in its Art. 1

Environmental education is understood as the processes through which individuals and the community build social values, knowledge, skills, attitudes, and competencies aimed at conserving the environment, a



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common good of the people, essential to a healthy quality of life and its sustainability (BRASIL, 1999).

As reported by Genebaldo Freire Dias (2010) in his book *Environmental Education – principles and practices*, the inadequacy of the efforts became evident; after the worsening of environmental changes in the 1990s and what was agreed upon at international conferences, it was expected that the advancement of EE would be greater and more efficient, but the process is still timid. It is evident that achievements have occurred, but the speed at which environmental degradation occurs is even greater (Dias, 2010).

Legal framework for environmental education in Brazil

Brazil has Federal Law No. 6,938, of 1981, which establishes the National Environmental Policy and is one of the first laws to mention environmental education, demonstrating its necessity, with the objective of promoting active participation in defense of the environment. The Environmental Education Policy emerged in 1999, when Law No. 9,795, of April 27, 1999, was enacted, which provides for EE and establishes the National Environmental Education Policy (PNEA). However, in practice, Law No. 9,795/99 has not been widely applied throughout the national territory, being considered merely procedural and lacking real effectiveness (BRASIL, 1999; Soler; Filho, 2019). According to Oliveira et al. (2017, p. 6, 7), “environmental education aims to awaken values and responsibilities that overcome ideologies and produce practical implications for changes in attitude”. Article 1 of this law defines environmental education

Art. 1 Environmental education is understood as the processes through which individuals and the community build social values, knowledge, skills, attitudes, and competencies aimed at conserving the environment, a common good of the people, essential to a healthy quality of life and its sustainability (BRASIL, 1999).



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Articles 2 and 3 address the presence of environmental education at all levels and modalities of the educational process, as well as stating that everyone has this right, as follows

Art. 2 Environmental education is an essential and permanent component of national education and must be present, in an articulated manner, at all levels and modalities of the educational process, in both formal and non-formal settings.

Art. 3 As part of the broader educational process, everyone has the right to environmental education, and it is incumbent upon: I – the Government, pursuant to Articles 205 and 225 of the Federal Constitution, to define public policies that incorporate the environmental dimension, promote environmental education at all levels of education and the engagement of society in the conservation, recovery, and improvement of the environment; II – educational institutions, to promote environmental education in an integrated manner within the educational programs they develop; [...]. VI – society as a whole, to maintain permanent attention to the formation of values, attitudes, and skills that foster individual and collective action aimed at the prevention, identification, and solution of environmental problems (BRASIL, 1999).

According to Carneiro et al. (2013), environmental issues must be included in public policies through the Multi-Year Plan (PPA), Budget Guidelines Law (LDO), and Annual Budget Law (LOA).

In the opinion of Oliveira et al. (2017, p. 4), “in addition to the legal framework provided for in national legislation, there is a range of other official government documents that seek to regulate and foster the praxis of environmental education in the Brazilian education system”. In addition to Law No. 9,795/1999, and equally relevant to the topic of environmental education, there is Decree No. 4,281/2002, which regulates Law No. 9,795/1999, and MEC Resolution No. 2, of June 15, 2012, which establishes the National Curriculum Guidelines for Environmental Education (DCNEA) and provides other measures.

Articles 5 and 6 of Decree No. 4,281/2002 are in line with Articles 2 and 3 of the PNEA, mentioned above, explicitly stating that all levels of education must include environmental education

Art. 5 In the inclusion of environmental education at all levels and modalities of education, the National Curriculum Parameters and Guidelines are recommended as a reference, observing: I – the



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integration of environmental education into subjects in a cross-cutting, continuous, and permanent manner; II – the adaptation of existing continuing education programs for educators.

Art. 6 For compliance with the provisions of this Decree, integrated environmental education programs shall be created, maintained, and implemented, without prejudice to other actions: I – at all levels and modalities of education. (BRASIL, 2002).

According to the National Curriculum Guidelines for Environmental Education, established through Resolution No. 2, of June 15, 2012, Art. 2 states that

Environmental education is a dimension of education, an intentional activity of social practice, which must give individual development a social character in its relationship with nature and with other human beings, aiming to enhance this human activity in order to make it fully a social practice and one of environmental ethics (MEC, 2012).

Article 7 of the aforementioned resolution establishes that

In accordance with Law No. 9,795, of 1999, it is reaffirmed that environmental education is an integral, essential, and permanent component of National Education and must be present, in an articulated manner, at the levels and modalities of Basic Education and Higher Education, and for this purpose educational institutions must promote it in an integrated manner in their institutional and pedagogical projects (MEC, 2012).

Carneiro et al. (2013) state that municipalities have great responsibility for environmental issues and must promote environmental education not only in municipal public schools, but throughout the municipality, aiming to protect environmental heritage. It is in this sense that Amendment No. 058/2020, Organic Law of the Municipality of Vilhena, in its Art. 122 provides that

The Municipality, in its regulatory role, shall promote the conservation, protection, recovery, and rational use of the environment and its natural heritage, establishing standards, incentives, and restrictions on its use and occupation, aiming at the conservation of nature and the sustainability of the city, by ensuring:

IV - promotion of environmental education, aiming at public participation in the protection and conservation of the environment (Câmara Municipal de Vilhena, 1998, p. 62).

In the opinion of Barcelos and Fleuri (2010, p. 268), “when we speak of education and citizenship, we want to draw attention to the need for the



educational process in general and environmental education in particular to pay attention to this planetary scope of ecological and/or environmental issues”.

Mechanized selective waste collection in Vilhena

In order to comply with the guidelines of the National Solid Waste Policy (PNRS), the Municipal Integrated Solid Waste Management Plan of Vilhena (PLAMRESOLV) was developed. This plan established targets for the implementation of selective waste collection in the municipality. In accordance with these targets, an agreement was signed with the Ministry of the Environment (MMA), through adherence to the National Zero Dumps Program. As a result, mechanized selective waste collection was implemented in Vilhena in April 2022.

With regard to education, the municipality has a school enrollment rate of 97.8% among children aged 6 to 14. In 2021, 13,972 enrollments in elementary education were recorded, distributed among the 41 schools at this level of education existing in the municipality (IBGE, 2023).

With regard to environmental issues, the municipality of Vilhena has 13.3% of households with adequate sanitary sewage, 30.6% of urban households located on public roads with trees, and 15.6% of urban households located on roads with adequate urbanization — characterized by the presence of storm drains, sidewalks, paving, and curbs (IBGE, 2023).

Vilhena was the first municipality in the Northern Region to implement the mechanized selective waste collection system, within the scope of the federal “Zero Dumps” program, which allocated approximately R\$ 4 million in investments to the city. The resources were used to acquire a washing truck and 1,500 waste containers, distributed throughout various neighborhoods and also installed in front of public institutions, such as the Federal University of Rondônia Foundation (UNIR), the Municipality of Vilhena (PMV), the Public Prosecutor’s Office of Rondônia (MP/RO), and the Federal Institute of Rondônia (IFRO), as



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well as locations with high waste generation, such as the Municipal Market, Arnaldo Lopes Martins Stadium, and Brigadeiro Camarão Airport (Estado de Rondônia, 2021).

The Mechanized Selective Waste Collection Program (CSM) was conceived by the Autonomous Water and Sewage Service (SAAE)⁴, in partnership with the Municipal Secretariat for the Environment (SEMMA) of Vilhena. The initiative participated in a national selection process that brought together approximately 1,300 projects from across the country, with municipalities from the states of Santa Catarina, Rio Grande do Sul, and Mato Grosso do Sul being selected. The Vilhena program stood out as the only representative of the Northern Region to qualify, demonstrating technical and operational capacity for the implementation of CSM, with a focus on environmental protection and improving the population's quality of life (Estado de Rondônia, 2021). Public Prosecutor Pablo Hernandez Viscardi, head of the 6th Public Prosecutor's Office of Vilhena and Coordinator of the Special Environmental Action Group (GAEMA) of the Public Prosecutor's Office of Rondônia (MP/RO), emphasizes that "through this partnership, which also encourages waste separation by the population and promotes selective waste collection, our region becomes a reference in compliance with Law No. 12,305/10, which established the National Solid Waste Policy (PNRS) in Brazil" (Rondônia ao Vivo, 2022).

However, after nine months of implementation, the new mayor of Vilhena, Delegado Flori, met with the Director of the Autonomous Water and Sewage Service (SAAE) to evaluate the progress of the program. After the meeting, the population was informed that mechanized selective waste collection would be suspended indefinitely in order to undergo a readjustment process. Beginning on

⁴ The Autonomous Water and Sewage Service (SAAE) is a Municipal Authority responsible for public water, sewage, and solid waste collection services in the municipality of Vilhena/RO.



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January 18, 2023, the containers began to be removed and were stored in the yard of the former Cibrazém, an area currently assigned to SAAE (Município de Vilhena, 2023b).

Environmental education in Vilhena

The Autonomous Water and Sewage Service (SAAE), through the Special Commission for Monitoring, Inspection, and Implementation of Socio-Environmental Technical Projects for the Expansion and Readjustment of the Water Supply System and Implementation of the Sanitary Sewage System, developed several environmental education projects in the municipality of Vilhena. The actions were carried out in accordance with the Environmental and Heritage Education Program, with the objective of raising public awareness about the importance of environmental preservation and encouraging adherence to the selective waste collection program.

Figure 1 below presents the main projects developed by SAAE.

Figure 1 – Environmental education projects carried out by SAAE.



Source: prepared by the authors based on data from SAAE (2023b).

Among the actions developed, the Water Project and the Sewage Project stand out, both of a technical-socio-environmental nature, comprising a set of



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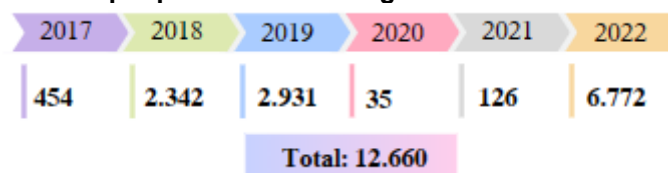
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educational and social mobilization activities planned and carried out by the Autonomous Water and Sewage Service (SAAE) in accordance with the contracted works. These projects aim to promote the socioeconomic and environmental sustainability of the undertakings, as well as to qualify and improve the investments made.

The Water Project, initiated in 2017, includes the expansion and upgrading of the municipality's water supply system. The Sewage Project, initiated in 2019, aims to implement the sanitary sewage system. Both include environmental education actions aimed at enhancing positive impacts and mitigating or controlling the negative impacts resulting from the interventions.

Between 2017 and 2022, the Special Commission continuously conducted environmental education lectures in municipal, state, and private schools, as well as in higher education institutions, public agencies, and community events. Figure 2 presents the number of people reached annually by the program's actions.

Figure 2 – Number of people reached through environmental education lectures.



Source: prepared by the authors based on data from SAAE (2023b).

The Habit Change activity consists of the distribution of kits containing 20 compostable bioplastic bags, produced from sugarcane, cassava, corn, or similar materials, during lectures, events, and socio-environmental actions in the neighborhoods served by the Mechanized Selective Collection (CSM) project.

The objective of the action is to promote environmental education, with an emphasis on selective collection and material recycling, especially encouraging the separation of organic waste. Food scraps are placed in



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biocompostable bags and deposited in containers intended for organic waste, where they undergo the composting process. The compost generated is subsequently used to grow vegetables and greens, contributing to the implementation of home and school gardens in the municipality (SAAE, 2023b).

Figure 3 presents the number of kits purchased and distributed.

Figure 3 – Number of kits of biocompostable bags purchased and distributed.

PROJECTS	MATERIAL	ACQUIRED	DISTRIBUTED	START	END
SEWAGE	BIOCOMPOSTABLE BAG KITS	14,980	14,980	02/2020	03/2023
WATER	BIOCOMPOSTABLE BAG KITS	5,620	5,620	02/2020	12/2022

Source: prepared by the authors based on data from SAAE (2023b).

The Domestic Composters activity consists of the follow-up and monitoring of composters distributed in municipal, state, and federal schools, as well as in institutions and the community in general, aiming at the production of organic compost. Monthly, the Commission conducts monitoring visits to the locations where the composters are installed, assessing participant engagement and verifying the care of the materials and the composting process (SAAE, 2023b). Figure 4 presents the number of composters purchased and distributed.

Figure 4 – Number of composters purchased and distributed.

PROJECTS	MATERIAL	ACQUIRED	DISTRIBUTED	START DATE	END DATE
SEWAGE	HOME COMPOSTER	65	58	05/2019	08/2024
WATER	HOME COMPOSTER	30	23	02/2018	09/2024

Source: prepared by the authors based on data from SAAE (2023b).

The Separar para Cuidar Project consists of carrying out awareness-raising activities with residents of the neighborhoods served by Mechanized Selective Collection (CSM), focusing on the implementation of the service and the proper separation of waste. The activities include visits to homes and commercial establishments, as well as the distribution of explanatory folders.



The project activities were implemented in various ways, as initially planned: “educational campaigns will be carried out for residents with the aim of providing instructions on separation at the source. There will be door-to-door visits, distribution of folders, campaigns on radio and social media, among other methods” (SAAE, 2022, p. 5), always seeking to explain the importance of the project to the population and readjusting it, if necessary (SAAE, 2022).

METHODOLOGY

To achieve the proposed objective, a case study was conducted based on documentary and bibliographic sources. The research used the *survey* method, through questionnaires, and the data collected were analyzed using content analysis and information triangulation.

As bibliographic sources, the research drew on books, scientific articles, dissertations, and theses related to the topic of environmental education, consulted in various databases and in the catalog of theses and dissertations of the Coordination for the Improvement of Higher Education Personnel (CAPES). In addition, contributions presented at conferences and events, such as the International Conference on Business Management and the Environment (ENGEMA), were considered.

ANALYSIS AND DISCUSSION OF RESULTS

In this section, the research results will be presented and discussed, with the objective of analyzing the reach of environmental education actions at the Federal University of Rondônia (UNIR), Vilhena Campus, in the context of the implementation of mechanized selective collection in the municipality of Vilhena/RO.

The research questionnaire was administered to the academic community of UNIR, Vilhena Campus, from September 19 to October 29, 2023,



with 195 participants, of whom 194 voluntarily responded to the instrument. Graph 1 presents the characterization of the respondents and the representativeness of the sample.

Graph 1 – Characterization and representativeness of respondents.

SAMPLE STRATA	TOTAL POPULATION	% OF POPULATION	SAMPLE	% OF SAMPLE	REPRESENTATIVENESS OF THE SAMPLE OVER THE POPULATION
STUDENTS	515	85%	145	74.8%	28.2%
FACULTY	49	8.3%	20	10.3%	40.8%
ADMINISTRATIVE STAFF	26	4.3%	19	9.8%	73.1%
OUTSOURCED EMPLOYEES	15	2.4%	7	3.6%	46.7%
OTHERS	-	-	3	1.5%	-
TOTAL	605	100%	191	100%	-

Source: research data.

The survey revealed that 74.8% of the respondents are students, 10.3% are faculty members, 9.8% are administrative staff, and 3.6% are outsourced employees of the Vilhena Campus. The remaining categories totaled approximately 1.5%, including those who stated that they do not participate in activities at UNIR (1%) and those who participate in UNIR but do not belong to the Vilhena Campus (0.5%). These last two categories were included in the questionnaire with the aim of eliminating respondents outside the research locus, resulting in 191 valid respondents.

Although the majority of respondents are students (74.8%), their representativeness in relation to the total population is 28.2%. Faculty members represent 40.8%, outsourced employees 46.7%, and administrative staff reach 73.1%, standing out as the category with the highest relative representativeness.

For analysis purposes, the questionnaire respondents were classified as “residents” — when residing in the neighborhoods covered by mechanized selective waste collection — or “academic community”. The staff members and

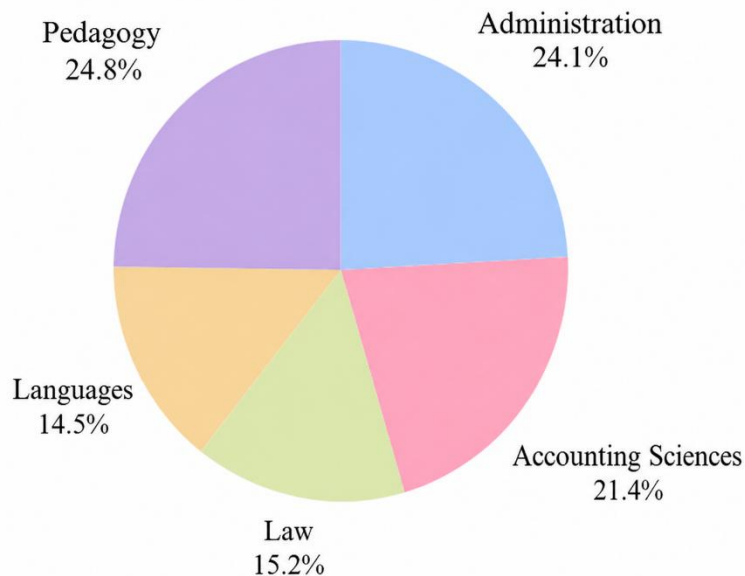


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employees interviewed were identified as “Interviewee A, B, or C”. The student category includes students from the Business Administration, Accounting Sciences, Law, Languages and Literature, and Pedagogy programs. Graph 2 presents the analysis of sample coverage by type of program.

Graph 2 – Percentage of students distributed among the programs.



Source: research data.

It is noteworthy that, although the sample presented an average distribution of 20% of responses per program, student participation was well balanced, ensuring a substantial sample from each program. The Pedagogy program recorded the highest participation (24.8%), due to the existence of classes in the morning and evening shifts, in addition to being the program with the largest number of students enrolled at the Campus, totaling 154 students. The Administration, Accounting Sciences, Law, and Languages programs are offered in the evening shift, with approximately 45 students per class (UNIR, 2023).

In order to identify whether the Environmental Education (EE) actions carried out by SAAE reached the UNIR academic community, participants were

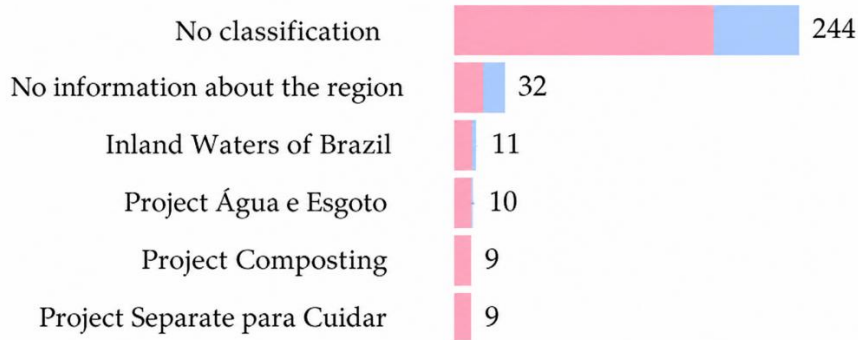


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asked which EE actions promoted by SAAE took place at the Vilhena Campus. Graphic 3 presents the actions carried out and the results obtained.

Graph 3 – Environmental education actions carried out at the *Vilhena Campus*.



Source: research data.

The sum of the responses may exceed the total number of participants, since more than one response per question was allowed. Among the responses received from the UNIR academic community, the blue field in the graph corresponds to responses from residents of the neighborhoods covered by the CSM, with 35 of the 146 respondents stating that they were unaware of environmental education actions carried out by SAAE at the Vilhena *Campus*, and eight residents, among the 22 respondents, did not remember the name of the project, although they recalled that some environmental education action had taken place.

The Change of Habits Project, which consists of distributing kits containing compostable bioplastic bags during lectures, events, and socio-environmental actions in the neighborhoods served by the CSM project, was mentioned by 11 respondents, two of whom are residents of the neighborhoods covered. These actions are aligned with what Mendes and Amorim (2019) highlight, according to whom raising awareness and informing citizens about the correct separation of waste is a fundamental role of environmental education.

The Water and Sewage Project, consisting of a set of educational and social mobilization actions carried out by SAAE — including environmental



education lectures in municipal, state, and private schools, colleges, events, agencies, and institutions — was cited by ten respondents, one of whom was a resident. Logarezzi's (2004) studies emphasize the importance of actions that encourage the principles of the 3Rs, promoting changes in citizens' habits regarding waste, in accordance with SAAE initiatives aimed at increasing public awareness.

The Composting Project, which consists of the follow-up and monitoring of household composters distributed to municipal, state, and federal schools, as well as raffled to the community in general through SAAE's institutional Instagram account, was mentioned 9 times by respondents, including one resident. According to Schmidt (2022), composting is one of the three key aspects of an efficient selective waste collection strategy, which comprises: waste separation as the initial stage, followed by collection and proper disposal, with organic waste being suitable for composting.

The Separate to Care Project, which promotes awareness-raising actions among residents of the neighborhoods served by the CSM, providing guidance especially on the correct separation of waste through visits to homes and businesses and the distribution of explanatory folders, was cited by nine respondents, including one resident of the neighborhoods covered. According to the SAAE Director, these figures reflect that “there was no efficient public awareness campaign for the population to ‘buy into’ the proposal on a massive scale” (Municipality of Vilhena, 2023).

Among the questions directed exclusively to students, of the 145 responses obtained, only 21.4% stated that they receive environmental education in their course, even if in a cross-cutting manner, while 36.6% stated that they were unaware of this information. Despite this, the Political-Pedagogical Projects (PPC) of the courses offered at the Vilhena Campus comply with the guidelines established by the Ministry of Education (MEC), including content related to



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environmental education policies in their bibliography and considering environmental education as a cross-cutting and interdisciplinary theme (MEC, 2012; UNIR, 2019).

When students were asked about environmental education activities carried out in their course, 59 responses were obtained to the non-mandatory question, of which 33 stated that they had not participated in any activity to date. The remaining 26 responses were organized and presented in Graph 4.

Graph 4 – Environmental education activities carried out.

ACTION TAKEN	OCCURRENCES	ACTION TAKEN	OCCURRENCES
MAKING PEDAGOGICAL TOYS USING RECYCLABLE MATERIALS	03	SEMINARS ON THE TOPIC (PREPARATION AND PRACTICE IN THE CLASSROOM, FILMS AND DEBATES)	01
TREE PLANTING (REFORESTATION)	03	PLANNING A SEGMENTED MAGAZINE ON ENVIRONMENTAL ISSUES	01
LECTURE WITH THE SAAE TEAM ON WASTE COLLECTION AND WATER USE	02	COLLAGE AND MODELING WITH ELEMENTS FROM NATURE	01
RECYCLING	02	MATERIAL ON THE GREENHOUSE EFFECT, GREENHOUSE GAS EMISSIONS AND BETTER ALTERNATIVES	01
EVENT: III ENSINA	02	HANDICRAFT WORKSHOP	01
EVENT: II VIVARTE	01	ORGANIC FERTILIZER	01
ENVIRONMENTAL MANAGEMENT	01	SUSTAINABLE ENERGY	01
THEORY OF ORGANIZATIONS	01	RESEARCH IN EDUCATION	01
ART ACTIVITIES	01	SCIENCE AND RESEARCH	02

Source: research data.

The number of occurrences corresponds to the number of times a given action was mentioned by the respondents. When analyzed using the content analysis method, it was possible to identify four groups of similar or approximate responses. The first group referred to actions carried out in handicraft and recycling workshops; the second mentioned the “III Ensina” and “II Vivarte” events; the third cited tree planting; and the fourth highlighted the lecture given by SAAE on waste collection and water consumption in the municipality.

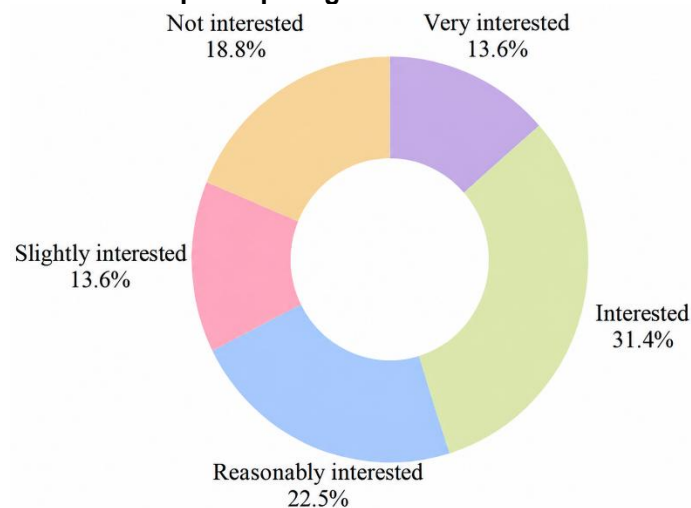
These results corroborate the data presented in Graph 8, in which ten participants stated that they were aware of the Water and Sewage Project, which



consists of educational and social mobilization lectures developed by SAAE at colleges and universities. The implementation of these environmental education (EE) actions is in line with what Vilhena (2014) states: “the success of voluntary selective collection is directly associated with investments in environmental education — or sensitization and awareness — of the population, which varies considerably among Brazilian municipalities.” Even if only minimally remembered, EE actions took place in the municipality before and during the implementation of the MSC.

To investigate the interest of the academic community in participating in environmental education actions, whether through extension projects or isolated activities, the following question was asked: “Would you be interested in participating in an extension project to raise awareness and disseminate information about selective collection and environmental education?”. The responses are presented in Graph 5.

Graph 5 – Interest in participating in environmental education actions.



Source: research data.

It can be observed that 13.6% of the participants stated that they were “very interested” in participating in extension projects focused on raising awareness and disseminating information about selective waste collection and



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environmental education, demonstrating awareness that their actions can positively transform the environment in which they live. In addition, 31.4% indicated that they were “interested”, showing that a considerable percentage intend to contribute, even if indirectly, and 22.5% stated that they were “reasonably interested”. These data indicate the need for additional encouragement and awareness, in order to increase participation in environmental education actions. The implementation of these activities by the academic community could also increase the University’s visibility in society, bringing benefits both to individuals and to the community as a whole.

On the other hand, 18.8% and 13.6% of the respondents stated that they were “not interested” or “slightly interested”, respectively, in participating in environmental actions, showing that environmental awareness is still incipient among some of the participants. In this sense, Souza, Moura and Oliveira (2018, p. 2) reinforce that: “unfortunately, the absence of effective environmental education contributes to preventing people from perceiving themselves as an integral part of this environment, while being one of its greatest predators.”

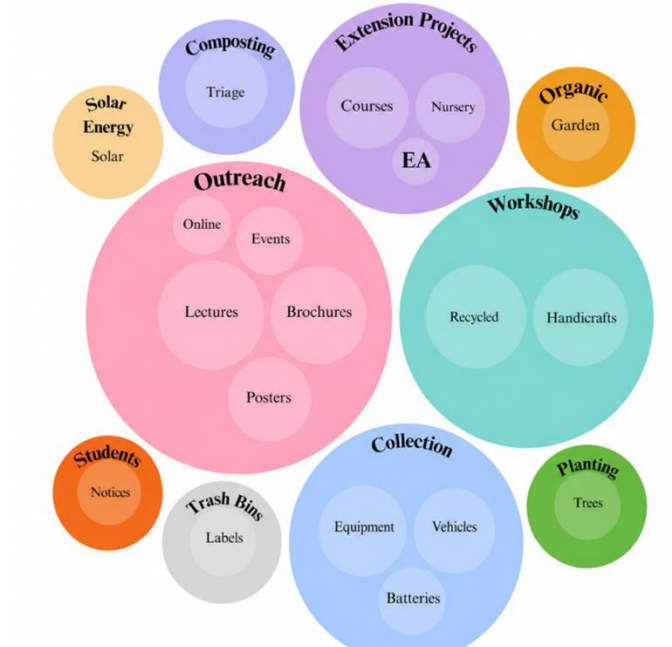
To conclude this topic, the respondents were asked about suggestions for environmental education and/or selective waste collection actions or activities that they would like to see implemented at UNIR, Vilhena Campus. A total of 67 suggestions were received, which were organized through content analysis, separating them by topic. Chart 6 illustrates the main suggestions, with the size of the circles in the bubble chart being proportional to the number of suggestions received.



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Chart 6 – Suggestions for environmental education actions.



Source: Author's own elaboration.

Among the main suggestions received, the implementation of outreach actions such as: lectures, digital and physical dissemination, through folders and posters; events in municipal and state schools, raising awareness about selective waste collection; workshops related to the topic of environmental education were the most frequently mentioned. It can be seen that the academic community lacks these actions and therefore considered them the main action to be carried out. As highlighted by Guimarães et al. (2016, p. 4), environmental education is “[...] one of the essential tools for the transformation of society, contributing to the construction of social value, knowledge, skills, attitudes and competencies aimed at the conservation of the environment”.

The implementation of extension projects coordinated by UNIR; handicraft and recycling workshops; replacement of the University's trash bins and the creation of recycling sheds within UNIR's own premises bring upon itself the responsibility for the management and implementation of environmental actions, seeking to include in the University's routine actions focused on



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environmental practices, making students responsible for waste separation and promoting integration between the university and the community. As Freitas *et al*. (2020, p. 556) state in their study that

Federal Higher Education Institutions (IFES), like other public bodies and entities that face the challenge of managing the different types of waste generated in the performance of their activities, in incorporating sustainable practices into solid waste management, among which are recyclable materials, must comply with the provisions established in Decree No. 5.940/2006 and Law No. 12.305/2010 (Freitas *et al.*., 2020, p. 556).

A similar proposal occurred at the Federal University of Alagoas (UFAL) between the years 2014 and 2015, when an extension project collected the waste generated at the University and transferred it to the Cooperative of Recyclers of Alagoas (COOPREL). During the 16 months of implementation, 1,375 kg of waste, including paper, metals, and plastics, were collected (Silva, 2019).

The workshops for making handicrafts with recyclable materials, the production of recyclable toys, the reuse of PET bottles, and handicraft fairs were widely mentioned by the participants, as were the collection points for recyclable materials — including batteries and lamps — and the organization of collective collection efforts, aimed at helping the municipality's waste pickers increase their income. Such suggestions demonstrate a high degree of empathy and concern for recyclable material collectors. According to Menezes and Dapper (2013), through adherence to recycling processes, residents assist the work of waste pickers, as well as indirectly help reduce flooding and disease transmission, and also reduce the extraction of natural resources.

In the suggestions submitted by the students, there was also a demand for extra grades or some type of incentive resulting from participation in environmental education activities. In this regard, Menezes and Dapper (2013, p. 173) emphasize that “their act of waste separation should be recognized as an effort to be rewarded, since this attitude takes them out of their comfort zone”. Thus, it can be observed that the role of the student regarding environmental



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impacts is conditioned by additional factors, and is not restricted solely to environmental awareness. It is therefore the responsibility of educational institutions to promote environmental education in an integrated manner in their programs, as established in item II of art. 3 of the PNEA. Incorporating environmental education into the curriculum as a way of developing critical thinking and constructing the role of the citizen in the face of environmental issues, this being a constitutional principle, provided for in art. 225, first paragraph and item six of the FC

Art. 225. Everyone has the right to an ecologically balanced environment, a common good of the people and essential to a healthy quality of life, imposing upon the public authorities and the community the duty to defend and preserve it for present and future generations.

§ 1. To ensure the effectiveness of this right, it is incumbent upon the public authorities to:

VI – Promote environmental education at all levels of education and public awareness for the preservation of the environment (BRASIL, 1988).

Regarding the environmental education (EE) actions already carried out and mentioned by the students, it can be observed that many are unaware of the occurrence of these activities in their curriculum. This fact can be explained by the fact that the academic period in which the student is currently enrolled was not asked, so some have not yet had the opportunity to take courses related to EE.

FINAL CONSIDERATIONS

The results of this study highlight the importance of the academic community, the University, and municipal management in promoting environmentally sustainable practices. The data analysis revealed that the majority of respondents are students, while the participation of faculty members, administrative staff, and outsourced employees provided a broader and more representative view of the academic community.



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To assess whether the environmental education actions carried out by SAAE reached the Federal University of Rondônia Foundation (UNIR), Vilhena Campus, several questions were asked of the academic community. Based on the results, it is concluded that these actions reached only a small portion of the academic community, often being ineffective or nonexistent for the population of Vilhena. It should be emphasized that environmental education is essential for the success of selective waste collection programs, and its absence compromises the results, causing a lack of awareness and consciousness among the population.

There is also evidence of negligence by SAAE in the implementation of these actions, since insufficient efforts were directed toward ensuring the full operation of a large-scale program, which benefited and could benefit the population of Vilhena even more. Therefore, selective waste collection will only be successful when the population demonstrates a high degree of environmental awareness, commitment, and appreciation of the municipality's solid waste management programs.

Regarding the suggestions for environmental education, the interest and engagement of the academic community in participating in environmental actions at the University are evident. Such suggestions should be encouraged and, whenever possible, implemented, in order to benefit not only the UNIR academic community, but also society as a whole.

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