ENVIRONMENTAL PRACTICES AS AN INSTRUMENT OF INCLUSION FOR PEOPLE WITH DISABILITIES

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ABSTRACT

The study evaluates the contribution of environmental education practices in the lives of people with intellectual disabilities served at APAE - Barcarena through environmental education workshops that are part of the project "Ecoefficient Education: School, Society, Environment and Sustainability", developed through a partnership between the Federal Rural University of the Amazon (UFRA), through the Institute of Agrarian Sciences (ICA) and the Amazon Center for Accessibility, Inclusion and Technology (ACESSAR), and the Company Navegações Unidas Tapajós (Unitapajós). The great challenge of humanity is to reduce the predatory action of man on natural resources and environmental education practices are important tools in the process of awareness and inclusion of people with intellectual disabilities to achieve harmony between man and nature with mutual benefits. In this context, a qualitative research was carried out through a bibliographic survey and application of a questionnaire with questions related to the theme. The results show that the use of environmental education practices to promote socio-educational inclusion proved to be an important tool in the inclusion of people with intellectual disabilities, providing the development of motor coordination, social inclusion and improvements in daily practices and healthy eating.

Keywords: Environmental education. Environmental practices. Intellectual disability.

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INTRODUCTION

When understanding Environmental Education (EE), it is essential to highlight its interdisciplinary character, which extends across different social areas. This makes it an essential tool for sustainable progress and for the preservation of ecological balance (Viana *et al*., 2020). For Bezerra *et al*. (2024), EE not only adds concepts of sustainability, but also reveals its effectiveness in the sensory and cognitive development of individuals with special needs. For Lopes *et al*. (2015), the approach to development and learning in special education signals a transformation in the educational vision that predominated in previous times. In this way, everyone can understand and share environmental education (EE) in their social context.

By emphasizing special education, the legislation ensures the inclusion and accessibility of people with disabilities. Therefore, the educational environment needs to provide support for functional communication, promote the teaching of social skills, and adopt positive and practical approaches that favor behavior during the school phase (Justino *et al*, 2019). In this way, the importance of forming critical and conscious citizens, able to act in environmental preservation and in facing ecological challenges, is highlighted. As established in Federal Law No. 9,795/99, which institutes the National Policy for Environmental Education, Article 10 determines that environmental education must be implemented as an integrated, continuous and permanent educational practice at all levels and modalities of formal education, including special education (Brasil, 1988). The inclusion of people with disabilities in environmental projects reinforces the idea that sustainability is a collective task, emphasizing the unique contribution of each individual (Justino *et al*, 2019). Students acquire essential competencies, such as the ability to solve problems and work as a team, while the community begins to recognize the importance of diversity and cultivate empathy (Almeida, 2021).

Environmental Education aims to raise awareness and prepare people to deal with current ecological challenges, such as waste management, food crisis, pollution, deforestation and climate change (Silva; Leão, 2020). In this context, education and inclusion are areas of study and practice that are significant for society, as they aim at a common goal of fostering awareness and the active participation of all in the construction of a more just, egalitarian, and sustainable society (Lopes and Sartori, 2018). This can be accomplished through tailored activities such as community gardens, recycling, and conservation programs that take into account the specific abilities and needs of these people (Justino *et al*, 2019). This approach also involves the development of accessible teaching materials and the training of educators to meet the particularities of the public with

intellectual disabilities (Alves; Silva, 2024). Analyzing the intersections between Environmental Education and Inclusion is fundamental for the development of policies and pedagogical practices that, in addition to facilitating access to information about the environment, encourage the active participation of all (Silva; Walnut; Pereira, 2015).

In view of this, the purpose of this study was to develop and evaluate inclusive environmental education initiatives. These initiatives covered landscaping and handicrafts using solid waste recycling and the creation of organic gardens. The aim was to identify the opportunities of these practices, in addition to proposing solutions that make education more accessible and effective for the intellectual and social growth of the beneficiaries of the Association of Parents and Friends of the Exceptional (APAE) in Barcarena-PA.

MATERIALS AND METHODS

The study was carried out at the Association of Exceptional Parents and Friends (APAE), located in the municipality of Barcarena, PA. The activities are part of the project "Ecoefficient Education: School, Society, Environment and Sustainability" active since 2014, which is developed by the Federal Rural University of the Amazon (UFRA), through the Institute of Agrarian Sciences (ICA) and the Amazon Center for Accessibility, Inclusion and Technology (ACESSAR), and the Company Navegações Unidas Tapajós (Unitapajós).

The first stage consisted of a bibliographic survey on the object of study, including books, scientific articles, dissertations and published theses. This approach allowed for a broader understanding of what would be possible to search directly. Then, questionnaires and interviews were applied to 8 teachers from APAE - Barcarena, with the aim of capturing explanations and interpretations of the phenomena in a systematic way (PROETI *et al*., 2017), addressing issues related to the theme, to assess the perception of teachers regarding the impacts generated on people with intellectual disabilities.

The pedagogical practices were developed with 12 APAE users with disabilities and a multidisciplinary team, composed of professionals in the area of Agricultural Sciences, including Agronomists, Forest and Environmental Engineers, in addition to APAE specialists, such as Psychologist, Occupational Therapist and Pedagogue.

Among the activities developed, the landscaping workshops stand out (Figure 1) initially, it was explained how the activity would take place, highlighting the importance of landscaping and environmental preservation. Then, the students were introduced to various tools and accessories that would be used during the activity, such as scissors, brushes and paints. Subsequently, the pruning of species in the landscaping and the painting of the external area of APAE was carried out. The purpose was to improve the appearance of the

space, bringing a more pleasant space, while stimulating motor coordination and the interaction of users with the environment, also promoting the development of sensory skills.

Figure 1 – Landscaping activity developed by users of APAE – Barcarena.

Handicrafts were produced using miriti materials and waste was reused, including tires, PET bottles and glass. The activity incorporated the use of tools such as pens, rulers, pencils, sandpaper, scissors and saws, enabling the application of various techniques, such as cutting, sanding, sawing and painting on the materials made. Participants had the opportunity to manipulate these materials, which stimulated creativity and opened up new perspectives for generating income through these skills. In addition, the activity reinforced the importance of education aimed at raising awareness about environmental preservation (Figure 2).

Figure 2 – Handicraft workshop developed by APAE – Barcarena.

In the activities of building vegetable gardens, the planting of vegetable seedlings was carried out by the participants of APAE, where an introduction and guidance on the implementation and maintenance of the garden were offered, highlighting the techniques to be applied in the garden, including the use of essential tools such as hoe, shovel and rake,

emphasizing the importance of producing healthy food both for the health of the participants and for the environment. After the theoretical explanation, the construction of the beds was carried out with the soil of the APAE area, in the dimensions of 1 m wide, 10 m long and 0.2 m high, adopting the spacing of 0.2 m between plants. Subsequently, seedlings of vegetable species were planted and vegetables were harvested, always with the guidance of a multidisciplinary team. Among the species harvested, the following stand out: parsley (*Coriandrum sativum* L.), cabbage (*Brassica oleracea* L.), chicory (*Eryngium foetidum* L.), chives (*Allium schoenoprasum* L.), lettuce (*Lactuca sativa* L.), cowpeas (*Vigna unguiculata* (L.) Walp.) and peppers (*Capsicum annuum* L.).

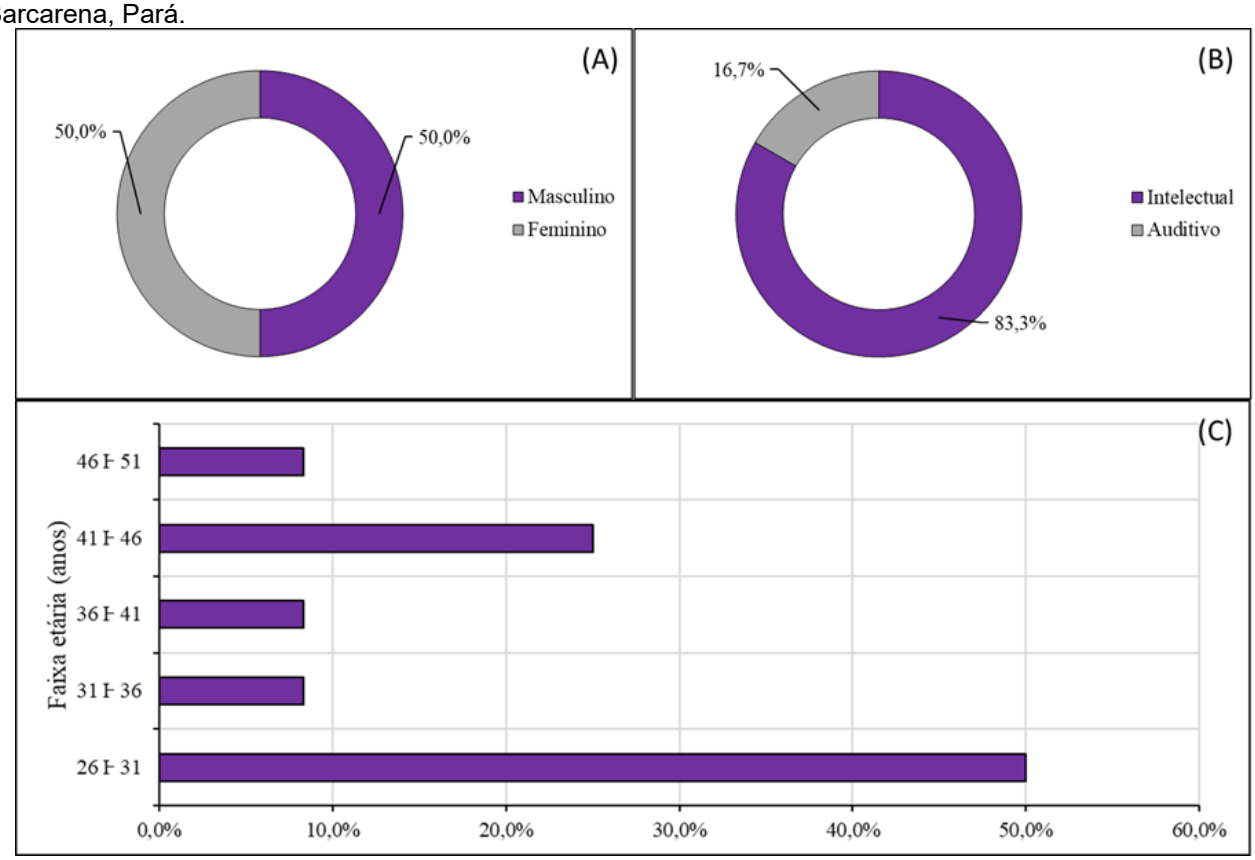
Figure 3 – Harvest of the vegetable garden produced by users of APAE – Barcarena.

Data collection was carried out through the application of a questionnaire with structured questions. The information obtained was organized and the most relevant were highlighted. Then, the data were entered into an Excel spreadsheet, where the necessary analyses and interpretations were performed.

RESULT AND DISCUSSION

Of the 12 participants assisted by APAE in Barcarena, Pará, who participated in the pedagogical practices, 50.0% self-declared male and 50.0% female (Figure 4, A) and 83.3% had intellectual disabilities and 16.7% had hearing disabilities (Figure 4, B), being people with Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), physical disability (SCD), intellectual disability (ID), visual impairment (VD) and Down syndrome (DS). In addition, 50.0% of the participants were in the 26 to 31 age group, 25.0% in the 41 to 46 age group, and 8.3% in the 46 to 51, 36 to 41 and 31 to 36 age group (Figure 4, C).

Figure 4 - Gender (A), disability (B) and age group (C) of the participants in the pedagogical practices in Barcarena, Pará.



In the interview, when asked about the perception of environmental education as tools for inclusion, whether the workshops improve social interaction with other users of APAE, whether users showed interest in the practices, about the influence of environmental practices on continuous practices, about the influence of environmental practices on healthy eating and whether the practices provide the development of motor coordination of the disabled, 100% of UFRA and APAE-Barcarena professors, pedagogical coordination, director and the president of APAE-Barcarena who participated in the project, answered yes to the questions (Table 1).

Pantaleão (2019) in his research with students with intellectual disabilities, observed an improvement in the social, affective, cognitive and motor development of this public, which improved their behavior in society. Melo *et al.* (2020) in his research with participants of the project "Ecoefficient Education: School, Society, Environment and Sustainability", observed that the practice of building vegetable gardens, in addition to developing learning, stimulated social interaction among the participants.

In this aspect, Santos *et al* (2015) working on the theme of solid waste in a special education school observed the strong interest of students in the development of all stages of activities aimed at environmental education. Medeiros (2018), in his research focused on the practice of the school garden in inclusive teaching through environmental education,

also points out the remarkable interest in the cultivation of vegetables by students with intellectual disabilities who, despite their limitations, do not present difficulties in the development of activities.

Veras (2012), in his research addressing the theme of solid waste, observed that the participants of the research were sensitized to know the environmental problems and the importance of reusing waste that can pollute the environment. The workshops held by APAE make users aware of the importance of practicing environmental education in everyday life with the reuse of waste for the making of handicrafts and composting.

For Moraes *et al* (2016), in their research, they observed that the organic garden as a didactic space gave students from an inclusive education center the opportunity to experience interdisciplinary activities, stimulating in various areas of knowledge to work on awareness of the environmental problem, pesticide use and inappropriate eating habits, encouraging the adoption of positive attitudes as citizens. In their research, Soares *et al* (2013) states that art workshops enabled students to evolve in motor skills, perception and concentration.

Table 1 – Questioning carried out for the participants of the pedagogical practices in Barcarena, Pará.

Questions	Relative Frequency	
	Yes	No
Do you perceive environmental education as a tool for inclusion?	100%	0%
Did participating in the workshops improve social interaction with other APAE users?	100%	0%
Did APAE users show interest in participating in the workshops?	100%	0%
Have you noticed the influence of environmental practices on everyday practices?	100%	0%
Did you notice the influence of environmental practices on participants' healthy eating practices?	100%	0%
Have environmental practices provided the development of motor coordination in the disabled?	100%	0%

When asked about the practices chosen by the users, the most mentioned were the production of jewelry, vegetable gardens and recycling (Figure 5, A). While the practices that users like the most were handicrafts, followed by the production of jewelry (Figure 5, B) and users stated that the cultivation of vegetable gardens, making keychains and production of seedlings are still being carried out in APAE (Figure 5, C).

Environmental understanding for people with intellectual disabilities is permeated by a human sensitivity that must be cultivated, alerting to the insertion of environmental education activities throughout the individual's educational life (Salomão and Klein, 2020). In the study by Souza *et al.* (2020), on the aggregation of value to the planting of cacti with the use of sapucaia urchins (*Lecythis pisonis* Cambess), it was observed that

environmental education can be an excellent tool to promote interaction between people with disabilities. Thus, it is evident that the environmental education practices developed for APAE users generated a sensitivity about the environmental problems arising from anthropic action, in addition to promoting the feeling of belonging agents and promoting environmental conservation.

Figure 5 - Word clouds generated from subjective questions (A) What is the theme most chosen by the participants of the workshops on environmental practices (jewelry, landscaping, vegetable gardens, recycling, composting)?; (B) Activity that you like the most?; and (C) Are any activities being continued?

CONCLUSION

Research shows that it is possible to implement environmental education through practices that enable people with disabilities to experience the environment. The inclusion of people with intellectual disabilities through environmental education actions is a positive way to combat segregation when worked together with the family and all actors in the educational environment.

Environmental education, because it has an interdisciplinary character, allows it to be worked in a transversal way, serving as a tool for the insertion of people with intellectual disabilities in the environmental theme, allowing their cognitive development and the feeling of being part of society regardless of their limitations.

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