RESUMO

Introdução: A Educação Ambiental (EA) é uma das ferramentas que melhor permite alcançar a sustentabilidade desde que envolva às comunidades nesse contexto. Objetivo: O objetivo dessa pesquisa foi identificar a evolução internacional e nacional da educação ambiental nas instituições de ensino superior e a transmissão desses conhecimentos às comunidades urbanas e rurais. Material e Métodos: O método empregado foi o qualitativo estimulador para que haja maior expansão do conhecimento acerca da dicotomia Educação Ambiental - Sustentabilidade, a partir dos cursos de graduação e pós graduação cuja abordagem fossem direcionadas à essa associação. Resultados: Os dados obtidos e a analisados indicaram que, nas instituições de ensino superior, No Brasil, especialmente na região norte, em ambos os níveis analisados, essa associação está evoluindo. Verificou-se também que já existem cursos de extensão para que as informações ou mecanismos teóricos sejam postos em práticas pelas comunidades urbanas e rurais. Outra preocupação indicou que a zona rural, especialmente no estado do Amazonas, já está no foco quanto as aplicações de ações de cunho ambiental que induzam a sustentabilidade a partir do conhecimento do corpo docente. No estado do Tocantins, o projeto de gestão logística sustentável poderá render bons resultados, se houver monitoramento e disseminação dele às comunidades do entorno do campus da Universidade Federal do Tocantins. Foi verificado também que poucas IES, na região Norte, estão exteriorizando projetos de EA com foco na sustentabilidade, e ainda não estão unidas em práticas ambientais com o objetivo de buscar a integração interinstitucional para que se alcance a sustentabilidade. Conclusão: Com isso, a sustentabilidade está em implantação nos processos produtivos a partir da elevação da sensibilidade dos usuários dos recursos naturais, sem comprometer a economia e a disseminação da EA para esse fim. Palavras-chave: Conservação; Educação; Meio Ambiente.

ABSTRACT

Environmental Education (EE) is one of the best tools to achieve sustainability if it involves the communities in this context. The objective of this research was to identify the international and national evolution of environmental education in higher education institutions and the transmission of this knowledge to urban and rural communities. The method used was the qualitative one, which stimulates a greater expansion of knowledge about the dichotomy Environmental Education - Sustainability, from undergraduate and graduate courses whose approach was directed to this association. The data obtained and analyzed indicated that, in the higher education institutions, at both levels analyzed, this association is evolving. In Brazil, especially in the northern region, this dichotomy is expanding. It was also verified that there are already extension courses for the information or theoretical mechanisms to be put into practice by urban and rural communities. Another
concern indicated that the rural zone, especially in the state of Amazonas, is already in the focus regarding the applications of environmental actions that induce sustainability from the faculty's knowledge. In the state of Tocantins, the sustainable logistics management project may yield good results if it is monitored and disseminated to the communities surrounding the campus of the Federal University of Tocantins. It was also verified that few HEIs, in the North region, are externalizing EE projects with a focus on sustainability, and are not yet united in environmental practices with the objective of seeking inter-institutional integration to achieve sustainability. With this, sustainability is being implemented in the productive processes from the increased sensitivity of users of natural resources, without compromising the economy and the dissemination of EE for this purpose.

**Keywords:** Conservation. Education. Environment.

**INTRODUCTION**

The role of education in the life cycle of individuals contributes to the understanding of the culture inherent in human life, as well as to the critical formation and social practice (ANTUNES; NASCIMENTO; QUEIROZ, 2018). It is not a specialization in teaching but the development of the art that integrates his formation as a human being. In this context, Environmental Education presents itself as an integrating and strengthening factor in the relationship between man and the Environment. It makes him the leading active participant in the teaching-learning process of using, conserving, and preserving natural resources (ROOS; BECKER, 2012). When this occurs, the EE shows the citizen what is his role in these two situations, as well as in environmental sustainability, since he acts as a holder of acquired knowledge, whether formal, especially in universities (FERREIRA: GOMES, 2020) or informal, from traditional communities, and that should be used to promote a diagnosis of changes, positive or negative, caused in the Environment, be a part transformer of inappropriate behavior in the man-nature relationship.

Moreover, this will cause changes in the current attitudes and behaviors of exacerbated and inappropriate use of natural resources (e.g., water) that damage and unbalance the Environment. Although it will not solve all of today's environmental problems, it will contribute to mitigating them (LELIS et al., 2018). However, for a sustainable vision from EE, it is necessary to have an interdisciplinary universe of education with the formation of a network of knowledge where the natural Environment intertwines with society, and the goal is environmental and social sustainability (JACOBI, 2003; TROMBETTA, 2014). On the other hand, sustainability is linked to activities that are currently able to meet the needs of today's living beings but is also concerned with the environmental legacy that will be left to descendants (LOPES, 2011).

Today sustainability, in 1992, was called "sustainable development," which, in turn, was called "eco-development," whose creator was Maurice Strong (1929- 2015), disseminated by Ignacy Sachs, Franco-Polish socio-economist, for whom inclusive development involves a growing economy, decreases the social gap, and protects the Environment (BRESSER- PEREIRA, 2013). This environmental protection claimed by Sachs comes from the education discussed in forums, congresses, conferences, meetings, and national and international symposia, especially those involving the United Nations Conferences and the Environment (e.g., WWF 1991). However, that little directed the broader and deeper learning on Environmental Education (EE) in the universities' highest academic degree (THOMAS, 1999). Then, the association between EE and sustainability, from the university context, deserves to be constantly studied and identify the evolution between them, and this justified this study and increased its relevance of it, as well as
contributed to the construction of his goal: to prepare a brief history on the evolution of EE and sustainability, internationally, nationally, and regionally. Therefore, this study began with the international evolutionary historical context, then moved into Latin America, specifically Brazil, and ended in the northern region and its seven states.

METHODOLOGY

To prepare for this study, we applied the method of bibliographic and documental research, with qualitative scope, to capture past information contained in international and national publications (articles, dissertations, and theses), whose access was free for the selection of literature that presented arguments compatible with the dichotomy "Environmental Education vs. Sustainability" in undergraduate and postgraduate courses, especially in the northern region, in federal and state higher education institutions, as well as the actions practiced in Campi, inter, intra and extra-classes, of these HEIs, and if there was an extension of these actions to the community.

RESULTS AND DISCUSSION

The EE becomes an indispensable tool for the analysis of environmental problems when it is associated with and based on a commitment between the user and the Environment, especially at the regional level, because each geographic area has specific peculiarities, such as precipitation rates in the Brazilian Amazon, and that the environmental imbalance of the forest that retains this moisture compromises the society itself and the local economy (SOARES: FREITAS, 2020). All these perceptions about this relationship should already be passed on to new generations because they will be challenged to maintain and conserve the Environment using EE. This statement is based on the transdisciplinary that has and should be used in all sciences, from politics to physics, mathematics, and biology, among others. The more information about the Environment reaches the agricultural production sites, the better the handling of soil, water, and the living components of these environmental systems (GOMES; MARTINS, 2020).

Such discussions increasingly indicate a worldwide need to intertwine EE with sustainability or sustainable development. This level involves each socio-environmental being that, in some way, is benefited by ecosystem services, whether provisioning, regulation, culture, or support, since sustainability requires a balanced ecosystem to continue providing these services to the communities that inhabit them (SILVA; TEIXEIRA 2019). They permeated the world and were energized between 2005 and 2014 in the so-called "United Nations Decade for Sustainable Development," which was like "development education." However, the association with EE is a primary factor for sustainability (HOGAN; TORMEY, 2008; TILBURY, 2003).

Abroad, the starting point, as far as sustainability is concerned, was the elaboration of the Global Agenda for Change (UN, 1987). It was prepared by Gro Harlen Brundtland, a Norwegian diplomat, and doctor, author of the report Our Common Future. In it, there are recommendations such as the cooperation between developing (today, emerging) countries in economic terms that lead them to common objectives based on their interrelationship with resources, with the Environment, and with development. The international views diverge on the relationship between education vs. sustainability because the problems nowadays are more complex. For example, we have climate change, whose generated social-ecological problems are still discussed in university graduations (HENSLEY, 2021).

In 2000, the Pennsylvania State University idealized the parameters that can transform universities into sustainable institutions that must maintain an optimistic projection for the
long-term maintenance of integrity and biodiversity, i.e., education will not be restricted only to students but should be extended to teachers, administrative staff, and general services (Nascimento, 2018). This holistic mission currently modifies the academic vision about sustainability that the HEIs have embraced and has as a "priority target" the dichotomy man-ecosystem, which labels sustainability as "sensitive," where the first cannot and should not replace the natural resources offered by the second, or if it does, it must have a limit, so that the intra and intersocial balance between them, is not lost (Seabra, 2011).

In the so-called emerging countries, such as Kazakhstan, sustainable development or sustainability was established via state document because the economic system in place in 2006 was that of exploitation of natural resources. Then, education transformed to sustainably empower people to use and exploit these resources (Kukeyeva et al., 2014). Another transformation in education to adapt to sustainability was practical applications of environmental actions in schools from the concept and use of recyclable materials such as cloth bags. The purpose is to constitute, in the learner, a fixed concept about environmental and personal development (Mirela; Petru; Hassan, 2015).

At the Latin American level, several events have been held that involved the Environment as a central theme in universities. The Autonomous University of Mexico (UNAM) took the initial step in Mexico in 1976. Nine years later, in 1985, the First Seminar on University and Environment in Latin America and the Caribbean took place. Three years later, in 1988, the United Nations Educational, Scientific and Cultural Union (UNESCO) since then, there has been the insertion of the "environment/environmental" theme in these institutions of higher education (Barba; Cavaleri, 2017; Leff, 2018).

As for the Brazilian context, the starting point for this association was the United Nations Conference on Environment and Development, known as Rio-92. It generated protocols containing guiding criteria for the consolidation of current sustainability (Dubois; Silvério; Tolentino Neto, 2017). In the state of Acre, the undergraduate courses, 12 in number, are with the academic content associated with Environmental Education (EE), in three macro trends: the conservationist (known to love, love to preserve); the pragmatic (sustainable development and technological revolution) and critical (facing inequalities and injustices from the socio-environmental discourse), this because universities create and generate knowledge about the EE, also disseminates it to other formal and non-formal educational levels (Carvalho, 2020).

Concerning the state of Amapá, mining has a rich economic vein, so the insertion of Environmental Education for students of technical courses should be a priority, especially in the man-nature relationship, since the sector of mineral extraction causes severe impacts on the Environment and does not contribute to sustainability, and this sector does not have labor with this dichotomous vision (Soares; Freitas, 2020). At the Federal University of Amapá (UNIFAP), the undergraduate courses for a complete teaching degree in Natural Sciences, associate physical knowledge (temperature; rainfall), chemical (oxygen gas and the forest) and biological (the most significant biodiversity on the planet) with those that allow a critical analysis regarding the natural resources in the Amazonian context (Ferreira; Gomes, 2020).

In the state of Amazonas, at the Federal University of Amazonas (UFAM), there was an indication that, in rural areas, environmental projects have as the main obstacle the resistance that teachers must apply the methodologies of projects associated with Environmental Education (Azvedo, 2009). To mitigate this problem, the UFAM has developed a program called "Puraquequara," whose focus is the practice of education that allows inducing sustainability. It involves undergraduate students, educational agents from elementary schools, and the community of the place that bears the project's name. All will participate in workshops and activities that associate these communities with the locality
where they live so that their environmental sensitivity is increased. They started to have more actions based on EE, leading to sustainability (UFAM, 2019).

In Pará, the University of Pará State (UFPA) is training staff and servers to acquire know-how in management processes based on reverse logistics that result in environmental sustainability. In addition, the discourse of interdisciplinary focus should be maintained because it causes a decrease in the width of the gap between the problems of the Environment, and literary productions and will increase the share of responsibility that falls to society (CAMELO: SIQUEIRA, 2019; VIANA; SILVA, 2022). At the University of Pará State (UEPA), the elaboration of an electronic work (e-book) under the aegis of the Graduate Program in Environmental Sciences (PPGCA). This work identified a significant statement about sustainability in the Amazon: "the echo of different sounds...to human rights, citizenship, the right to life, conservation, and preservation of nature...(ANDRADE; GÓMES, 2017). So, the firmer the connection between the dichotomy EE-Sustainability, the more echoes of voices will be heard for a more sustainable environment.

In Rondônia, of the 14 undergraduate courses, six of them, especially Geography and Biological Sciences, present environmental nations with the society-nature dichotomy, where the socio-environmental being is the constructor agent of knowledge because he starts to consider various aspects, with highlights for the cognitive, the affective, the ethical beyond the aesthetic (BARBA; CAVALIERI, 2017). Already in Roraima, the Federal University of this state participates in the dichotomy of this research by implementing a specialization course, in 2018, of Environmental Education. The foundation is the installation of dialogues and interdisciplinary interactions, starting from geography and culminating with the generation of solutions to environmental issues in this state (UFRR, 2021). The expansion of the dissemination of EE in Boa Vista - RR checked the rural areas in places of agricultural production as the settlement Nova Amazonia-Cauamé, created by the National Institute for Agrarian Reform (INCRA) in 2001, where the UFRR maintains an advanced Campus. The goal was the implementation of environmental practices (lectures, film screenings, discussion of publications on the subject) whose results could be displayed at science fairs (RAMOS et al., 2020).

At the Federal University of Tocantins, sustainability from sustainable logistics was practical from the preparation but not yet implemented, for management and institutionalization reasons, of the "Sustainable Logistics Management Plan". Because of this, the plan in question is in the revision phase for the cession of the previously mentioned problems. However, this initiative will be of more value for the contribution and awareness of the faculty, students, and administrative staff, and perhaps it can go beyond the campus area of these HEIs (ALMEIDA, 2015). However, for this to occur, it is necessary that, in addition to this plan, the administrative bodies, there are training courses for students and teachers, so that these components have the environmental sensitivity because this increased and, with this, both can develop courses, workshops, practical and theoretical journeys to communities as the relationship EE-Sustainability and, thus, apply the externalization of sustainability from environmental sensitivity (SILVA, 2018).

CONCLUSION

Environmental education is being increasingly increased in higher education institutions, where graduates and postgraduates are citizens committed to the rational use of natural resources, from technical learning and extension projects that are reaching urban and rural communities so that environmental sensitivity is the best driver for sustainability, from the context that these resources are, in most cases, finite. When degraded, others have high recovery costs, besides damaging the economy, making sustainability a challenging goal.
However, the work among the HEIs for joint elaboration and environmental practices, aiming at everyday actions with elaborations by their students, professors, and administrative bodies, has not yet been identified. That is, the HEIs continue, in an isolated way, working on projects that do not present a holistic vision of how integrated participation leads to more fruitful and better-quality environmental results since the Environment belongs to and for everyone.

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