

Original article

# Environmental education in times of social-environmental crisis: possibilities of its inclusion in occupational therapy training, from the academics' perspective

*Educação ambiental em tempos de crise socioambiental: possibilidades de sua inclusão na formação em terapia ocupacional, desde a perspectiva de docentes*

*Educación ambiental en tiempos de crisis socio-ambiental: posibilidades de su inclusión en la formación de terapia ocupacional, desde la perspectiva de las/os docentes*

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## Abstract

**Introduction:** The socio-environmental crisis is a relevant issue and there is an urgency in its reflection and search for solutions in all areas of knowledge. This study, using environmental education as a base, becomes part of this need from professional training in occupational therapy. **Objective:** To analyze the possible relationships between environmental education and disciplinary training, from the perspective of occupational therapists who are dedicated to university teaching in the province of Concepción, Chile. **Method:** Qualitative methodology through 7 individual interviews with occupational therapists who work as university academics. The information is subjected to a thematic content analysis and theoretical triangulation. **Results:** There are theoretical and ethical foundations in

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the discipline linked to nature, which can be included in professional training. It is proposed that this issue should be addressed transversally in training. The most appropriate teaching methodologies for its implementation would be of a theoretical-practical nature, such as project-based learning or service learning. Nature-based actions can be taught as an intervention strategy at the service of caring for nature, and at the same time for caring for people and communities.

**Conclusions:** It is invited to include environmental education in the training of occupational therapists, since it is a powerful tool to advance in the protection and conservation of the environment.

**Keywords:** Environment, Occupational Therapy, Nature, Professional Training.

### **Resumo**

**Introdução:** A crise socioambiental é um tema relevante e há urgência em sua reflexão e busca de soluções em todas as áreas do conhecimento. Este estudo, tendo como base a educação ambiental, torna-se parte dessa necessidade de formação profissional em terapia ocupacional. **Objetivo:** Analisar as possíveis relações entre educação ambiental e formação disciplinar, desde a perspectiva de terapeutas ocupacionais que se dedicam ao ensino universitário na província de Concepción, Chile. **Método:** Metodologia qualitativa, com a realização de sete entrevistas individuais com terapeutas ocupacionais que atuam como professores universitários. A informação é submetida a uma análise de conteúdo temática e triangulação teórica. **Resultados:** Existem fundamentos teóricos e éticos nas disciplinas ligadas à natureza, que podem ser incluídos na formação profissional. Propõe-se que esta temática seja abordada de forma transversal na formação. As metodologias de ensino mais adequadas para a sua implementação seriam de natureza teórico-prática, como a aprendizagem baseada em projetos ou a aprendizagem em serviço. As ações baseadas na natureza podem ser ensinadas como uma estratégia de intervenção ao serviço do cuidado da natureza e, ao mesmo tempo, do cuidado das pessoas e das comunidades. **Conclusão:** Convida-se a incluir a educação ambiental na formação de terapeutas ocupacionais, pois é uma ferramenta poderosa para avançar na proteção e conservação do meio ambiente.

**Palavras-chave:** Meio Ambiente, Terapia Ocupacional, Natureza, Formação Profissional.

### **Resumen**

**Introducción:** La crisis socio-ambiental es un tema relevante y existe una urgencia en su reflexión y búsqueda de soluciones en todas las áreas del conocimiento. Este estudio, usando como base la educación ambiental, se hace parte de dicha necesidad desde la formación profesional en terapia ocupacional. **Objetivo:** Analizar las posibles relaciones entre la educación ambiental y la formación disciplinar, a partir de la perspectiva de los y las terapeutas ocupacionales que se dedican a la docencia universitaria en la provincia de Concepción, Chile. **Método:** Metodología cualitativa con la realización de 7 entrevistas individuales a terapeutas ocupacionales que se desempeñan como docentes universitarios. La información se somete a un análisis de contenido temático y triangulación teórica. **Resultados:** Existen fundamentos teóricos y éticos en la disciplina vinculados a la naturaleza, que pueden ser incluidos en la formación profesional. Se plantea que esta temática debe ser abordada de manera transversal en la formación. Las metodologías de

enseñanza más acordes para su implementación, serían de carácter teórico práctico como el aprendizaje basado en proyectos o el aprendizaje de servicio. Las acciones basadas en la naturaleza pueden ser enseñadas como una estrategia de intervención al servicio del cuidado de la naturaleza, y al mismo tiempo para el cuidado de las personas y comunidades. **Conclusiones:** Se invita a incluir la educación ambiental en la formación de terapeutas ocupacionales, dado que es una herramienta potente para avanzar en la protección y conservación el medio ambiente.

**Palabras claves:** Ambiente, Terapia Ocupacional, Naturaleza, Formación Profesional.

## Introduction

The socio-environmental crisis is a primary concern for humanity, because it puts the lives of all living beings at risk, since this crisis would be responsible for climate change and its consequences (López, 2020). The origin of this situation would be given by the uncontrolled increase in the world population, the economic extractivism typical of capitalism, the disappearance of forests, pollution, intensive agriculture, among others (Ibáñez, 2020). These phenomena account for the negative effects of human action itself on the environment (Blanco-Wells & Günther, 2019; Murcia-Murcia, 2023). In other words, human occupation without ecological awareness could be the cause of this great crisis.

The socio-environmental crisis is closely related to modernity, capitalism and its production systems that appropriate nature. As stated by Gómez & Taeli (2015), modernity proposes that human beings are superior to any other way of life, since they possess reason as a differentiating virtue. With this attribute, they can govern, manipulate, control and take advantage of nature and its resources for capitalist production and their own well-being.

The current socio-environmental crisis has deepened within the framework of neoliberalism, due to the expropriation and privatization of the natural, symbolic and cultural means of production, which in turn are metabolically destructive, since they generate toxicity that poisons nature and society; and due to the complicity of the environmental institutions of the different governments, which promote sustainability initiatives without any change in the logic and capital production (Toledo et al., 2015; D'Amico & Agolia, 2019; Luna-Nemecio, 2020).

In this context, it is impossible to stay away from this problem. For this reason, the discussion about the socio-environmental crisis in occupational therapy is unavoidable.

## Socio-environmental crisis and Occupational Therapy

*I am not a terrorist, they hate me just because I am opposed to living in a capitalist way, because I do not believe that rivers are our resources, but that they are living beings that must follow their course, because I do not remove anything from the earth without asking, and I always try to give back everything I use (Subverso & Portavoz, 2013, 3:51).*

Lieb (2022) calls on occupational therapists to become activists for stopping climate change, especially in countries where this issue has not been considered relevant in their professional work. Several authors point out that this discipline is privileged to reduce the ecological impact caused by human action in nature, since it is capable of knowing how people can adjust their occupations, in order to conserve biodiversity and generate ecological balance within the framework of an industrialized world (Hudson & Aoyama, 2008; Méndez, 2011; Federación Mundial de Terapeutas Ocupacionales, 2012, 2018; Wagman, 2014; Martins et al., 2018; Simó, 2023).

The protection of the environment is an ethical problem, which requires strengthening solidarity and honoring interdependence to perpetuate life as an act of intergenerational occupational justice (Ung et al., 2020; Kiepek, 2023; Simó, 2023); that is to say, that the errors of this and previous generations regarding the care of the environment, require that the current generation act quickly to deliver a sustainable world to future generations. In this sense, it is essential to think that occupations can be a way of ecological resistance to the advance of capitalism (Valderrama Núñez, 2019), and of re-existence to the socio-environmental crisis that it causes (Valderrama Núñez et al., 2022).

The socio-environmental crisis is a relevant issue in the field of occupational therapy and there is, as in our society in general, an urgency in its reflection and search for solutions in all areas of knowledge and professional practice. This research becomes part of this need from a fundamental place for the development of the discipline: professional training. This is a disputed space to discuss the topic of the socio-environmental crisis and its effects on nature, since the knowledge that dominates occupational therapy teaching is of a colonizing, anthropocentric, biologist nature and with a strong orientation to the field of health (Bianchi & Serrata Malfitano, 2017; Jurdi et al., 2018; Pérez, 2021). For this reason, installing this discussion in the training contexts is an opportunity to consider this topic as part of the study plans, reviewing the potential contents and the appropriate learning methodologies to implement for that purpose.

To establish a meeting place between the socio-environmental crisis and occupational therapy training, the notion of environmental education is used, which seeks to build conscious, critical and reflective citizens about the social and material conditions in which they live with other living beings, to generate a change in the attitude of human beings towards the environment, which allows a better quality of life for people and communities; with the purpose of achieving peace, justice and social equity (Tréllez Solís, 2006; Martínez, 2010; Eschenhagen & Sandoval, 2023).

Environmental education aims to develop in people the ability to sensitize and act to respect all existing ways of life, so that the former give meaning to being on this planet and commit to rebuilding relationships in order to care for life (Sauvé, 2014; Bustamante-Toro & López-Castaño, 2022; Zavala et al., 2023).

Environmental education promotes that people understand that nature is a subject of value and dignity by itself, an untradeable value in the market, its value is given because it generates life, allows the existence of ecosystems and the sustainability of the planet as a whole. (González-Escobar, 2017). In this sense, environmental education is a cultural tool based on the needs of people and the planet, not the market (Caride & Meira, 2020).

## **Research goal**

The objective of this research is to analyze the possible relationships between EE and occupational therapy training, from the perspective of occupational therapists who are dedicated to university teaching in the province of Concepción, in the Bio Bio Region, in Chile. This is a territory with some socio-environmental conflicts, including water and hydroelectric plants, the forestry industry in Wallmapu, industrial fishing to the detriment of artisanal fishing, the fight for the preservation of wetlands and their ecosystem, among others.

The context in which this research is carried out is specified, because territorial conflicts in the Global South present specific characteristics such as environmental, social and cultural exploitation and depredation of the industrialized countries of the Global North (Horta-Gaviria & García-Rodríguez, 2022). Having said the above, it is considered that this research can motivate interest in this subject in this and other parts of the world.

## **Methodology**

This research is of a qualitative nature, with a phenomenological approach (Gurdián-Fernández, 2007), since it rescues the reflective processes of the participants based on the experience and knowledge they possess in their role as teachers in professional training in occupational therapy.

## **Participants and data production techniques**

Purposeful sampling is applied, based primarily on the information needs of the research (Hernández-Ávila & Carpio Escobar, 2019). 25 professors were summoned through email and telephone contact. The inclusion criteria considered were: a) occupational therapists who work part-time or full-time in university teaching in undergraduate occupational therapy programs in the province of Concepción; b) experience of at least 1 year in university teaching; c) experience of at least 1 year in some area of occupational therapy. In the opinion of the research team, these criteria account for sufficient expertise on the part of the participants, which allows them to reflect on this research topic.

9 professionals responded favorably to the call, however, 7 people finally participated, 5 of them are men and 2 women, 5 with postgraduate master's degrees, 2 with a bachelor's degree. In the call, the research goals were sent in writing to all potential participants. With those who agreed to be included in the research, this information was reinforced verbally before the interview and in writing through informed consent.

On average, the group has 5 years of teaching experience, they have worked in different fields of action, but mainly in rehabilitation and health (mental and physical); The age average of the participants ranges from 30 to 60 years of age. All the educational institutions in the province of Concepción are represented.

In Chile, the occupational therapy course at the university level lasts for 5 years of study. The participants have developed teaching at basic levels (first and second year),

intermediate levels (third and fourth year) and advanced level (fifth year). They have teaching experience in different teaching modalities: in theoretical subjects (lectures), theoretical-practical (workshops, seminars, and laboratories), and practical (clinical and field). Lastly, they have taught courses related to disciplinary foundations, training research, and learning evaluation and intervention tools in the fields of physical, mental, educational, and community health.

The information was produced through semi-structured interviews, since this allows access to the meanings of the phenomena in a flexible way and from the very words of those who say them (Kvale, 2011). A script of questions was prepared by the research team, based on 3 predefined categories: content related to nature that could be included in the teaching of occupational therapy, learning methodologies for it, and challenges to include nature in training. The instrument was validated by expert triangulation.

For the purposes of this research, based on what Maller et al. (2006), the notions of nature, environment and planet are used interchangeably to refer to ecosystems that contain water, land, air, flora and fauna; to exemplify: gardens, forests, squares, nature reserves, plants, wild and domestic animals, rivers, lakes, among others.

The interviews were carried out in person and virtually depending on the availability of the participants. They were materialized by 4 of the authors of this research, during the months of May and June of the year 2022 and had an average duration of 1.5 hours. During the interviews, field notes were not taken and the saturation of the data was not discussed by the research team, since according to the methodological orientation used, it imports the points of agreement and disagreement of the analyzed experience (Smith & Osborn, 2007).

### **Information analysis procedure**

The data obtained is subjected to a thematic content analysis (Díaz, 2018). The interviews were recorded and transcribed verbatim. In a first stage, 4 of the members of the research team carried out the first coding and categorization of the interviews. In a second moment, 2 members of the research team reviewed and re-categorized the material. To define the topics and their respective categories, a triangulation is carried out by all the authors of this research. As a result of this procedure, the following is defined: 1) Theoretical and ethical foundations to include in occupational therapy training; 2) Nature-based practices to include in occupational therapy training; 3) Learning methodologies around nature in occupational therapy.

Support software is not used for this procedure, since it is carried out through a topic filtering built by the research team. This strategy is chosen since it allows a greater appropriation and familiarization with the data for its qualitative interpretation. Finally, theoretical triangulation is used to deepen and broaden the analysis (Benavides & Gómez-Restrepo, 2005).

### **Ethical considerations**

The protocol of ethical aspects for the research of the school of occupational therapy in which this research is registered was respected, in addition, the recommendations of the Declaration of Helsinki and Law 20,120 of the Ministry of Health of the

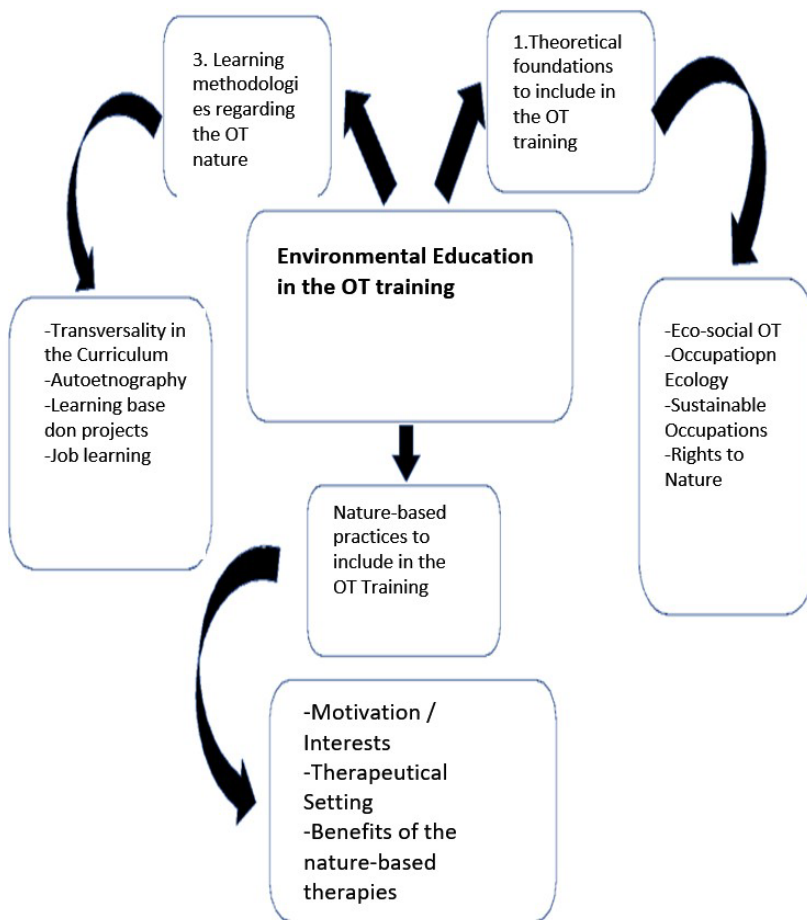
Government of Chile, which regulates the scientific research on the human being, its genome and prohibits human cloning, were followed.

Ethical considerations included voluntariness, contemplating the withdrawal of the participants without any prejudice to them. Anonymity has been protected, which is expressed in not including their personal or employment data in the research results. Confidentiality is safeguarded by storing the recording and transcription of the interviews on a drive, to which only the research team has access, since it is password-protected. This material will be eliminated after 2 years of the interviews. In this research, no known or foreseeable risks of the interviews are observed in the participants.

All these aspects, in addition to the research goals, are contained in the informed consent that was signed by all the participants.

## Results

Below is Figure 1, which contains the main topics and categories of the results of the analysis process.



**Figure 1.** Analysis results diagram.

For the presentation of the results, a coding was carried out, where the letter (E) represents the information production technique and a number (1 to 7) assigned randomly.

### **Theoretical and ethical foundations to include in occupational therapy training**

For the participants of this study, there are several aspects that occupational therapy must problematize within, with the purpose of developing alternatives to the hegemonic episteme that have dominated the discipline. One of those aspects is to incorporate the idea that nature is a living subject, which allows and produces life:

*We have to understand that nature, like man, is subject, because it has life. ... So that view of understanding the world is not established in occupational therapy ... that must be changed, understanding that we depend on nature to survive (E2).*

Another aspect to consider is that the matrix of rationality with which disciplinary knowledge, practices and discourses have been built are anthropocentric, therefore, they have made invisible the leading role of nature for life itself, affecting the relationships that we, human beings, establish with all existing ways of life. Therefore, it is imperative to modify the paradigm with which the discipline has been produced and reproduced up to now, an issue that includes undergraduate training processes:

*We must change from the look that we currently have, which is quite anthropocentric, to a biocentric look, because that makes me think that the relationship of man or the way in which we build the human relationship is not only subject to the relationship with another human being, rather, it is a relationship that one builds with others, whether these are human beings or not (E2).*

*Get out of the Anthropogenic of the human being and worry about ecosystems and how we also participate in the ecosystem (E6).*

The newly presented accounts are in line with what was stated by Lieb (2022) and Kiepek (2023), who propose incorporating other episteme into the discipline, especially other non-Western cultures and indigenous worldviews to broaden the understanding of this phenomenon, an issue that had already been discussed by Iwama (2006) and Iwama et al. (2008) when pointing out the indivisibility of nature and people as a frame of reference to understand occupation and occupational participation.

In general, the participants declare that it is very necessary and pertinent to include the topic of nature in the training of occupational therapists, through theoretical aspects that are understood as the foundations of the discipline:

*I think that it is very relevant to the research plans, thinking about the chronology, the hours and the number of units, [...] one could perfectly speak of eco-social therapy, [...] of the importance of occupation as a tool to contribute to remedying the climate crisis from our discipline (E6).*



*I believe that any subject that talks about the foundations of human occupation, the perspectives of occupational therapy, etc. [...] you have to talk about this topic, about occupational ecology (E5).*

Simó (2011, 2012, 2023) and Simó & Townsend (2015) argue the concept of eco-social occupational therapy whose main objective is the co-creation of inclusive and sustainable communities together with the communities with which we have the privilege of working. In addition, they incorporate the notion of occupational ecology, which would correspond to a movement of action-reflection, that is, the awareness of the ecological genocide that we are facing and the taking of concrete actions to restore balance in the environment through human occupation, including actions in daily life such as unplugging electrical appliances if they are not used, checking the keys or water taps so that they are not lost unnecessarily, using non-polluting means of transport such as bicycles, avoiding the use of plastic bags, among others.

These conceptualizations represent disciplinary theoretical foundations that are aligned with the purposes of environmental education, while they are oriented towards raising awareness and the execution of actions for the protection and conservation of nature. Aspects that can be addressed in the professional training of occupational therapy students, through disciplinary subjects that include these contents, which are progressively deepened throughout the research plan, and can be materialized in intervention practices and / or research with communities affected by the socio-environmental crisis.

An understanding of occupation emerges as a promoter in the conservation of nature, since between occupation and nature there is an inseparable interdependence relationship, which invites us to consider that it is necessary to recognize the effects of one on the other in the profession:

*I believe that any occupation can be transformed into one that is sustainable or that generates compensation for the environment (E1).*

*To talk about how the occupation has to deal with that, since the occupation has some responsibility beyond the individual, but also with its environment; with all living beings, with the ecological (E3).*

The participants recognize that when we take care of ourselves, whether at a micro or macro social level without a conscious exercise about what we do and are, the occupation becomes a destroyer of nature, a relevant aspect to include in education to recognize the “dark side” of the occupation from an ecological point of view:

*Occupation to the extent that one takes care of oneself, one also generates waste, all of us are generating in some way residues or occupational waste (E2).*

*There is no awareness of the impact that our occupations and progress have on people's daily lives, [...] this reunion with nature is also important to assume the costs that carrying out occupations without reflection (E6).*

According to the previous accounts, there is a concern by the professors that human occupation is linked in a balanced way and occurs in harmony with nature, while protecting it. The notion of sustainable occupations developed by Drolet et al. (2020) embodies this ideology, since they correspond to those occupations that satisfy human needs while positively conserving ecosystems. For their part, Simó (2023) and Kiepek (2023) invite us to think that through occupations not only ecological damage can be produced, but also that if they are ecologically aware it is possible that they promote the restoration of damaged natural spaces, positively impacting psychosocial well-being and social participation.

Finally, the participants realize that the socio-environmental crisis issue and the care of nature is a matter of human rights, since to the extent that the environment is protected, the lives of people, groups and communities are protected. This implies, in turn, a full understanding of them, while being part of and created by nature, it must be protected to protect ourselves:

*One of the rights of the child, for example, is to grow up in an environment free of contamination, it is a fundamental part of people's daily lives (E6).*

*There is an interdependence between what the environment is and human rights are, I do not see it as something isolated (E3).*

*Understanding the respect for life and all ways of life, Human Rights are absolutely integrated because, I even remove the last name, and I say the rights of nature, not only of man, but of nature (E2).*

These reports coincide with what was indicated by Castilla et al. (2022), who argue that environmental education is based on the fact that the rights of nature are the ethical and political foundation for the existence and exercise of other human rights. At the same time that it is recognized that nature as a living being, it also has rights that must be enshrined and respected (Tassin Wallace, 2022).

In summary, from the comments presented it is possible to indicate that environmental education in occupational therapy could be enhanced with the presence of conceptual notions developed in the discipline itself, such as eco-social occupational therapy, occupational ecology and sustainable occupations. It is assumed it can help students understand the relationship of this topic with their own identity as occupational therapists. Simultaneously, these contents need to be discussed and accompanied from an ethical perspective, which recognizes and protects the rights of nature.

### **Nature-based practices to include in occupational therapy training.**

The participants in this research point out that incorporating nature in the training field implies addressing the subject as a relevant aspect for their future practice of the profession, especially when associated with the various intervention processes in the field of health in which occupational therapy is involved. They estimate that health states depend on nature, that is, if we live in respectful environments of it, human health will benefit:

*I cannot understand health separately from the environment and I currently think of it that way (E5).*

*The environment is fundamental to having mental health (E6)*

Some participants point out that occupations associated with nature can enhance rehabilitation processes by promoting personal motivation to do them:

*If gardening is important to the person, this will be a very good therapeutic tool to work on all the rest, both mental health and physical health (E1).*

On the other hand, it is believed that nature itself can be considered as the therapeutic setting for the implementation of intervention practices, since the fact of being in it or remembering it produces feelings of calm and well-being in people, since in that space-time the human harmonizes, connects with himself and his environment:

*People like to see the sea, the waves, the visualization of the landscape, it generates a positive effect in terms of mental health for the elimination of stress (E2).*

*One does the exercise many times when you are subjected to high stress levels, to mentally transport yourself to a space that generates calm or this feeling of well-being and usually one thinks of natural resources, the beach, the forest, then the connection with the Nature tends to be something that make us that calm (E7).*

The participants in this research establish various benefits for recovery in health-disease processes when nature is involved in them, for example: for wound healing, increasing strength and range of motion, sensory stimulation (olfactory and tactile) in rehabilitation processes in physical health, lower back pain reduction with the use of vertical orchards:

*The most optimal healing occurs in an open environment, exposure to sunlight, for example, greatly favors healing processes (E2).*

*Working with orchard soil to work strength actions, range of motion, and sensory alterations in children. I believe that differentiation can be achieved in different areas (E4).*

*The sensory, the issue of textures and smells can also help not only mental health, but also in the comprehensive rehabilitation plan in terms of physical health (E6).*

*For example, I can say that I love gardening, and if I have scoliosis or hip osteoarthritis, I can make a vertical garden, and in the vertical garden I eliminate the hip activity, so I will work on a significant activity and will generate pain reduction (E1).*

Corazon et al. (2010), define nature-based therapies as those intervention processes in the field of health, in which nature becomes a promoter and facilitator. The assertions just exposed agree with what was stated by Vibholm et al. (2020), who indicate that

nature-based therapies improve the motor and sensory-perceptive functions of those who perform them.

The idea also emerges that the use of nature in rehabilitation processes in the field of mental health would produce positive effects such as improving the capacity of users for social inclusion and reducing drug doses:

*We can see occupational therapy practices in this space that have helped transform people's lives in the field of mental health, people who come to the greenhouse and at first they don't even speak and begin to relate to the plants and, with the most important thing that the orchards have, which is the socialization process, and they have been transformed, they have received therapeutic discharges, the amount of drugs has decreased (E6).*

Nature-based therapies enhance psychosocial rehabilitation processes by increasing social and community cohesion (Spano et al., 2020; Yang et al., 2022). Sia et al. (2022) demonstrated that people who practiced gardening during the confinement period due to COVID 19 improved resilience factors that allowed them to cope with social isolation. Aspects that are in tune with the story just exposed.

In any case, some comments show the need to continue the discussion regarding the nature-based therapies in occupational therapy, since it can be recognized only as a resource for intervention, overlooking that they must also be directed to conserve and protect nature and not only be useful to human beings:

*So I think it applies both to mental health, and in the context of physical health, not looking at it only as a resource for personal well-being (E7).*

This statement implies that in learning nature-based therapies in occupational therapy, these are understood as sustainable occupations, as reported by Simó (2011) with the community gardening project, Herrera Bravo (2018) and Mansilla et al. (2023) with the use of horticulture in urban contexts and Farias & Faleiro (2019), with agro-ecology in rural contexts; since they are occupations oriented to the recovery and revitalization of green areas, they are based on respect for the times and rhythms that the land offers, and lastly, they have a conscious intention to break with patterns of anthropocentric and capitalist domination.

In summary, it is possible to point out that to include environmental education in occupational therapy would be interesting to address nature-based therapies as an intervention strategy for environmental care, and at the same time, highlighting its benefits for the processes of physical and mental health of individuals and communities.

### **Learning methodologies around nature in occupational therapy**

The participants of this research, given the importance of the subject matter, indicate that it should be incorporated into all the subjects of the curriculum in a transversal manner, since this promotes the construction of citizens with an ecological awareness:

*I say that these contents should be applied transversally in all subjects (E2).*

*There is the enhancement, let's say, of this issue of ecology and the environment, of making future professionals more aware of the environment (E6).*

*I think that it is super relevant, more than because of a training from the OT, I think that a training as a citizen of today. Where we have a climate emergency in which all the small actions that we all do on a daily basis will generate an impact (E1).*

The participants in this research report that there are some experiences regarding the inclusion of nature in the research processes and professional practices of the students of the study institutions in which they work:

*I think it is super necessary to talk about it and that they be incorporated into the programs and that initiatives for that be generated, I think that we have seen it much more with students who are in research processes where this also emerges as a necessity (E7)*

*Colleagues who are developing their internships or professional practices, how many of them do garden workshops, recycle lids, etc. (E1).*

The participants affirm that knowledge about the socio-environmental crisis and its effects on nature is not necessarily produced at the university level, but is found in active participation in organizations that work to preserve the environment. Although this situation is not directly related to the professional training of the students, but rather corresponds to their personal initiatives, it is interesting to look at those experiences to learn from them with the purpose of moving forward in its inclusion in education, for the valuable knowledge and practices that circulate in these spaces:

*That there are students who have done it independently from this NGO, because there are also institutions or foundations that work as part of garden workshops and that line (E5).*

*There are many institutions that work in the ecological sphere and I say that students and professionals should be linked to all of them [...] we have to make this effort, let's say, to link up with all the environmental associations. caring for the ocean, caring for the land, whatever arises we must be there, we T.O should be the first to actually be there because it is a way of taking care (E2).*

*I have known students who have participated in instances like these. It seems to me that they are super important, it seems to me that more spaces, resources and moments must be allocated to be linked to it (E3).*

Based on previous comments, as well as what was found by Aslam et al. (2022), it is actually the students who are most interested in and promote the ecological issue in their education. This can be seen as an opportunity to address it in professional training. In this sense, autoethnography would be an interesting methodology to implement, since it seeks to produce learning from their own knowledge, transforming it into a

pedagogical practice that is in tune with the new sensibilities of the student body (Almeida et al., 2020).

In order to strengthen learning in environmental education, the participants indicate that it should be through a theoretical-practical teaching modality and linked to the affected communities:

*I imagine that we should have theoretical support, but this work or this environmental or more ecological area, I think it has to be practical, like in the field, [...] there are projects related to the environment in which we worked with the lagoon and there they were (E4).*

*Some of the children who have worked in groups have been interested in ecological issues and have also developed projects with certain communities (E3)*

These opinions coincide with those proposed by Dutra et al. (2018), Pino & Gálvez (2021) who estimate that through learning based on community projects of an environmental nature, students can achieve new knowledge related to recycling and the optimization of environmental costs and resources. Together they become amplifiers of sustainable occupations among their family members and friends. In this same line, based on what Valderrama Núñez (2020) and Mansilla et al. (2023) state, it is possible to point out that service learning is a strategy that can be used as a teaching methodology, to promote the appropriation of neighborhoods, recovering green areas such as squares and the construction of community gardens on vacant lots.

## **Discussion**

The findings of this research show that the need to include the relationship between occupational therapy and nature in professional training circulates discursively. At the same time, coinciding with Núñez et al. (2017) it is verified that environmental education, when considered as contrary to the dominant episteme, is in a relegated position in the field of occupational therapy teaching.

In this sense, from what Walsh (2014) refers, environmental education in professional training can be an excuse to produce cracks and fissures in the traditional structure of occupational therapy curricula. Due to the current colonizing and anthropocentric nature that they possess, they tie up the possibility of learning intervention alternatives beyond the dominant foundations, and at the same time, they would limit the ability to build students who are capable of imagining and building a different world, in which they are protagonist of the necessary transformations to achieve that goal. In the words of Santos (2021), the incorporation of the socio-environmental crisis and its effects on nature in the occupational therapy curricula would allow the insurgent, liberating and hopeful character of the profession to flourish, when accompanied by content, methodologies, ethics and practices that allow the emancipation of all forms of life.

In any case, based on what Calderón et al. (2022), the results of this study allow us to point out that there are some minimum elements to promote environmental education in occupational therapy education, such as content and disciplinary

knowledge that seeks to protect the environment (eco-social therapy, occupational ecology, sustainable occupations.), intervention practices that take care of nature and thus take care of the people treated in occupational therapy (therapies based on the care of nature), execution of training practices that promote sustainability and that are developed together with the communities (learning service, project-based learning).

Pino & Gálvez (2021) argue that the students show an ecocentric and biocentric perspective, which exceeds the anthropocentric model that has historically dominated man's relationship with the environment, this is similar to what was indicated by the study participants. In any case, it is relevant to mention that higher education students do not always exhibit a sensitivity towards the importance of the environment and that they even exhibit unfavorable behaviors in relation to its protection (Ramos & Treviño, 2022). Therefore, discussing environmental education is a latent need for the construction of occupational therapy students with ecological awareness.

The results agree with what was stated by González-Escobar (2017), who considers the need to build a biocentric ethic in students through environmental education, which seeks to transcend beyond the human species, seeking for it to produce forms of coexistence with other species without harming them, but in harmony and mutual balance.

In order to move forward, it is essential to include a critical and political perspective in the training, for which it would be useful to address issues such as ecological justice, which considers that the well-being of nature is a right that it possesses as an end in itself (Cruz Rodríguez, 2014); its focus is the protection of the rights of ecosystems that protect the lives of all (Vicente, 2020); and seeks to restore the damage caused to nature, not only because human beings are protected in this way, but because it is an obligation that must be established in legislation to transform the notion of rights beyond well-being of the human race, but of all species (Cruz, 2017). Those aspects can be articulated and materialized consistently with the goals of a restorative and protective occupation of the environment (Drolet et al., 2020; Simó, 2023; Kiepek, 2023), through the cleaning of beaches, rivers and wetlands, of planting trees in urban areas, among other actions with the communities.

Another fundamental aspect to consider for the construction of professionals who are critical and sensitive to the socio-environmental injustices suffered by a significant part of the population of the Global South, is the notion of environmental racism, which accounts for the discrimination in environmental public policies suffered by raced and poor social groups (such as Afro-descendants, indigenous peoples, peasants and people who live in areas of environmental sacrifice, among others), who are affected by the toxic waste of capitalist production in their territories, with the complicity and negligence of governments, affecting their health and well-being (Moreno Parra, 2019; Lorena et al., 2022).

The findings of this study, like those of Gordon & Pollard (2022), Bonham-Corcoran et al. (2022) and Firby & Raine (2023), suggest that nature-based therapies used in occupational therapy provide physical, mental, relational, spiritual, and social benefits. They can be considered a complex occupation and further disciplinary research is required in this regard. However, it is important to establish that not all offer therapeutic benefits or protect the environment (Bonham-Corcoran et al., 2022). For this reason, it is important to consider that when being taught in OT, they are oriented according to the notion of sustainable

occupations (Drolet et al., 2020), that is, that they are concerned with caring for nature and offering therapeutic benefits simultaneously.

Although this study establishes 3 teaching-learning methodologies that are consistent with environmental education in higher education (autoethnography, project-based learning, and service learning), it is relevant to indicate that these are not limited to such examples. Cabral (2022) proposes the following: social cartography, which enables to identify socio-environmental conflicts in specific territories and potential solutions to them in a participatory manner with the affected communities; and the creation of participatory audiovisuals, which seeks to transform affected communities into protagonists of the protection and conservation of the environment and of their lives. These methodologies can be used as a complement to those indicated by the participants in this research, and also stimulate the transfer of environmental education from the classroom to the territories and thus be in direct contact with the communities and vulnerable groups.

The results of this work reinforce what Galvaan et al. (2022) stated, who argue that an environmental education in occupational therapy requires collecting the trajectories of the students, as a powerful source of knowledge to be integrated from a social and environmental perspective. Complementing the above, Leff (2017) indicates that it is necessary to value the knowledge produced around nature, of those social groups that defend and fight for its protection, as well as those who understand it as a subject that produces life itself, such as the peasantry, the native peoples and Afro-descendants, since these would guide the social, economic and political reconstruction necessary for a sustainable world.

This last point is essential, since the task of implementing environmental education requires that Universities, considered the cradle of the production and reproduction of expert rationality and scientific knowledge, move towards a decolonization of themselves (Restrepo, 2018). For this, it is essential that they are able to generate formal mechanisms to recognize and incorporate other knowledge, such as that of students, activists and social and community organizations that work and advocate for the defense of the territory and the environment (Alvarado, 2020; Méndez Reyes, 2021). In this same line, Molano & Herrera (2014) argue that it is the higher education institutions themselves that must be transformed to contemplate in all their work (physical infrastructure, institutional policies, links with the environment, teaching, research, among others) the protection and environmental conservation.

## **Conclusions**

It is recommended that this study be considered as one of the possibilities to include environmental education in the teaching of occupational therapy, since it is an initial approach to recognize theoretical, ethical and political content, as well as teaching-learning methodologies that can be included in the study plans. The purpose of this work is to promote the training of occupational therapists for a world that requires new perspectives and alternative solutions to the socio-environmental problems that afflict the planet.

Environmental education is a powerful and necessary tool for the training of students with a high commitment and ecological awareness. A call is made to make the necessary



efforts to include its principles in the teaching of occupational therapy in a transversal way in the curriculum. It is encouraged to systematize the training practices focused on the protection and conservation of nature, jointly with the students, professors and other figures involved to have experiences that allow them to continue discussing their scope and disciplinary challenges.

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### **Author's Contributions**

Cristian Mauricio Valderrama Núñez was responsible for the conception of the text, methodology and data analysis, writing, review of the document, approval of the final version. Constanza Alejandra Enríquez Valderrama was responsible for the methodology and data analysis, document review, approval of the final version. Marco Astete Cereceda was responsible for the organization of sources, methodology and data analysis, writing, review of the document, approval of the final version. Fernanda Villarroel Peña was responsible for the methodology and data analysis, document review, approval of the final version. Marion Pollet Muñoz was responsible for the methodology and data analysis, writing, review of the document, approval of the final version. Javiera Isidora Guíñez Aguilera was responsible for the methodology and data analysis, writing, review of the document, approval of the final version.

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