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Forgetting Green Biographies: Memories and Relationship With Plants in a Primary School

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Abstract
This research explored the experiences of children and parents in a primary school class in Reggio Emilia, Italy. Participants took to the green archives where they engaged in a process of exploration, rediscovery and appreciation of their relationship with plants. The researchers' approach, based on active listening and curiosity, brought the sleeping green memory to life. This facilitated a narrative practice that played a pivotal role in shaping a new ecological and cultural trajectory embedded in the multiple realities of everyday life. The stories revealed the central role of children as keepers of traditional plant knowledge, setting the stage for intergenerational transmission and sharing across different cultural contexts in the urban setting. Consequently, this promoted the dissemination of fluid and diverse knowledge. At the same time, parents became constructive participants in their children's activities. They invested time in sharing their own experiences. Ethnobotanical research analysed and evaluated the developing relationships that children and parents developed with the plants, thereby reviving ancestral links. In this context, education served as a vehicle to enable individuals to cultivate their inner gardens, embracing all plant species and promoting an integrated approach between theoretical knowledge and practical application. The design of this educational environment is a neutral space, capable of being home to different experiences. In addition, the act of storytelling about relationships with the natural world would create a deep sense of well-being for all participants and facilitate a new form of parent-child connection in the school environment.

Keywords: Narration, Green Biography, Ethnobotany, Plants, Biophilia

Introduction

The aim of this study was to explore children's and parents' relationships and perceptions with plants, using ethnobotany as the primary framework of investigation, an interdisciplinary science dedicated to the study of human interests and interactions with plants across historical periods (Caneva et al., 2013). The research methodology involved the meticulous observation of the relationship between parents and children with plants through the use of various modes of interaction such as discussions, verbal communication, drawing, and written expression. In addition, the study was also concerned with the analysis of the influence of memory on plant knowledge.

Memories were identified as an integral part of the learning process, serving as a conduit through which children acquire knowledge about plants and their environment. The accumulation of such prior knowledge built the basis for a heightened interest in and empathic connection with the plant world.

The results of the study suggested that engaging in discussions and sharing memories of plant-related experiences could potentially contribute to a pervasive sense of well-being. In addition, the data suggested a plausible influence of these nature-related memories on the parent-child relationship. It was hypothesised that dedicating time to recounting childhood experiences and relationships with plants may strengthen the emotional bond between parents and children, thereby fostering greater mutual understanding.

Background of Existing Literature and Information in Support of This Study

This study located itself in the framework of two synergistic approaches, specifically those described by Monica Guerra (2021; 2018) and Beate Weyland.

Monica Guerra, a distinguished pedagogue and professor at the University of Bicocca in Milan, led a research and action initiative in the Italian context, focusing on the importance of outdoor education and the enrichment of educational environments. Her work encompasses different contexts such as the street, the neighbourhood, the city, the park, the courtyard and the garden. Central to her research is an emphasis on fostering encounters and relationships with nature, facilitated through activities such as the collection and creative cataloguing of natural materials. Professor Guerra's academic efforts gave rise to the development of specialised courses and master's programmes aimed at spreading a profound understanding of the interplay between education and nature. Her influential studies have catalysed the establishment of a robust network of scholars working together to advance knowledge on the subject.

Beate Weyland is a distinguished scholar with a keen interest in the evolution of schools and their physical spaces. Currently a faculty member at the University of Bozen/Bolzano, she conducted interdisciplinary studies focusing on the nexus between pedagogy, architecture and design to bring about transformative changes in educational environments. Over the years, her research focused on various aspects of educational development, with a particular emphasis on cultivating a sensory approach to education, as described in her remarkable work (Weyland, 2017). This line of enquiry involves the investigation of mediators, artefacts and games designed to facilitate learning experiences through engagement with the five senses. The study under consideration aligns with the trajectories of the recently established EDEN LAB (Weyland, 2022) laboratory, a scientific initiative that brings together interdisciplinary

reflections on the interplay between pedagogy and architecture (Weyland, 2015; Weyland, Galateo, 2023). This laboratory, directed by Beate Weyland, combines a nuanced exploration of the relationship between pedagogical methodology and architectural design, focusing on integrating plants into educational and academic environments. The initiative introduced plants into indoor environments originated during the period of lockdown caused by the pandemic. The concept materialised through the implementation of an online course with students of Education Sciences, focusing on the theme of sensory education (Weyland, 2017). This course integrated the plant as a mediating element, perceived as a living subject with an educational role. Further exploration of this concept developed during a seminar called ″Nature inside the home: before the green classroom″, which conducted as part of a series of open dialogues on education offered during the three-month closure in 2020. This seminar explored the topic in-depth, involving teachers and educators in discussions. The overall aim investigated the feasibility of fostering ″proximity relationships″ with domestic nature in educational spaces. Since autumn 2020, in response to the need for physical distance imposed by the pandemic and to increase perceived well-being, resilience and quality of life, two green classrooms have been installed at the Faculty of Education of the Free University of Bozen/Bolzano. The initiative, based on studies by Raith and Lude (Raith & Lude, 2014) and Mancuso (Mancuso, 2018), involved the acquisition of 100 plants to be placed in two rooms originally designed for 100 students. With a focus on fostering didactic innovation in line with the "GreenComp" framework (Bianchi et al., 2022) and care (Mortari & Paoletti, 2021), group activities organised during the general didactic workshops. These activities aim to involve future teachers in the creation of materials and games that facilitate active interdisciplinary interactions with plants. This strategic approach aimed to equip future teachers with the necessary tools to reflect on and incorporate innovative teaching methods in the field of green education. While the initial proposal was to use plants as practical alternatives to facilitate physical distancing, the underlying rationale went beyond mere functional considerations. Indeed, the deeper purpose was to consider how the introduction of plants into indoor spaces could not only make academic and school environments more inviting and resilient (Aydogan & Cerone, 2021), but more importantly, to cultivate close relationships with plants that evoke emotional and affective dimensions. This deliberate integration of indoor nature was also intended to strengthen bonds of care and foster a sense of discovery (Goleman et al., 2012). Facilitating students' learning about plants and incorporating this knowledge into teaching practices in schools was also an opportunity to align with the provisions of the new law that came into force on 20 August 2019. This legislation mandates the inclusion of civic education in school curricula, with a special focus on promoting the health and well-being of children (Art. 3). It also emphasises the importance of providing education to cultivate a caring relationship with the environment and promote awareness of the 2030 goals. Integrating plant education into the curriculum not only contributes to botanical knowledge, but also serves as a vehicle for achieving the broader educational objectives outlined in the legislative framework.

EDEN (Educational Environments with Nature) (Weyland, 2020), focused to develop a comprehensive theoretical framework focusing on the intersection of education and sustainability, with a particular emphasis on the integration of plants into indoor educational spaces. The primary aim of promoting plant familiarity in such environments was to cultivate emotional-affective relationships with botanical entities. This deliberate engagement aims intended to initiate a heightened awareness and sensitivity to nature as a whole, extending beyond indoor environments to include outdoor environments and, in particular, emphasising the importance of plants in the wider natural context. One of the key goals of the workshop was to consciously cultivate intimate relationships with plants, in line with the wider quest

for an essential reconnection with nature, as exemplified by the sentiments expressed by Lucy Jones (2020). The research presented here is fundamentally concerned with meticulously examining the relationships that exist between parents and children and their interactions with plants. Through the use of green memories, the study tried to facilitate a nuanced process of awareness raising. This research was closely aligned with the overarching aims of the workshop, which evolved into a platform that fosters interdisciplinary interactions among scholars dedicated to advancing initiatives aimed at supporting and promoting the vital process of reconnecting with nature.

Rooted in Nature: Reconstructing Children's and Parents' Interests Using the Ethnobotanical Approach Through Green Memories

The connection between humans and the natural world had its roots in the earliest stages of human existence and embodies an intrinsic relationship that has continued throughout the ages. This constant connection evoked a deep sense of well-being, a sentiment supported by scientific literature that emphasises the importance of integrating our surroundings with plants and natural elements (Danon, 2021; Maas et al., 2009; Stuart-Smith & Zuppet, 2021). Furthermore, the act of expressing or narrating personal experiences (Demetrio, 2015) emerged as a conduit for individuals to achieve a sense of integration, allowing them to shape their moments in a creative and inspiring way.

In the essay entitled "Education and Nature" (Antonietti, 2022), Luigina Mortari examined the philosophical perspectives of Maurice Merleau-Ponty, focusing in particular on the concept that nature embodies life and sensible matter, with the human being serving as an integral link in the network of existence. The discourse placed significant emphasis on the role of thought in human life, drawing an equivalence between cognitive processes and the imperative of teaching children an ecological framework for interpreting their directly experienced realities. The essay argues that a deep connection to practical experience is essential for the cultivation of discursive intelligence, a capacity by which individuals interpret and understand the complexities of the world. The ecological philosophy of education is invoked as a guiding principle for a pedagogical practice that aims to rekindle early experiences of nature in the world. The proposal was to use existing knowledge and consciously engage the senses to cultivate a new form of attentive receptivity and emotional resonance in interaction with nature and the environment. The author emphasises the need to delve into the biological matrix of life and advocates an exploration that departs from entrenched cultural codes deeply rooted in the paradigm of modernity. This assertion underscores the notion that each individual archives memories and interpersonal encounters in his or her cognitive faculties. Sensory engagement with the environment, which impresses significant impressions on our minds, becomes a central aspect of our cognitive experience. This interactive process emerges as a substantive topic for discussion and takes on a formalised form when individuals find themselves immersed in situations of particular interest. The research aimed at influencing the learning process of the relationship with plants (Hidi & Renninger, 2006) wanted to support and maintain children's interest. Starting from an exploration of the children's prior knowledge, various conversations began with the explicit aim of understanding the depth of their knowledge and how they organized and internalised this knowledge, both in terms of conceptual understanding and mental representations. In industrialised areas, there is a clear lack of direct contact with nature among school-age children, often accompanied by deficiencies in the recognition of living organisms, their biological characteristics and their importance in ecosystems or their contribution to human existence (Tunnicliffe, 2001). Although it could be assumed that this condition is more

prevalent in urban areas (Tuan, 1978), some studies have shown a decline in environmental knowledge even among children from rural areas (Díez et al., 2018; Ianni et al., 2015). Forest loss poses a direct threat not only to the health of the planet, but also to human well-being, as highlighted in Goal 15 of the 2030 Agenda. There is therefore an urgent need to protect, restore and promote the sustainable use of terrestrial ecosystems. This requires the adoption of sustainable forest management practices, active measures to combat desertification and decisive action to halt and reverse both land degradation and biodiversity loss. Profound changes in urban development are having a significant impact on our well-being, encompassing both physical and psychological dimensions. The process of urbanisation imposes a wide range of selective pressures on people, with significant consequences such as changes in mortality rates, demographic patterns, the spread of disease and the presence of environmental factors such as air, water and soil pollution. Other critical aspects, such as hygiene, nutrition, social relations and the composition of the microbiota, are also subject to change, each playing a pivotal role in shaping the course of evolution (Mancuso, 2023).

How can children and parents be brought back to reconnect with Nature, with plants? What knowledge and memories are preserved about plants? What special moments emerge from the memory of children and parents?

In response to these inquiries, ethnobotanical studies have emerged as a valuable tool for the preservation of knowledge about plants, knowledge that would otherwise be at risk of fading with time (Briceño et al., 2017). The goal was to actively perpetuate the memory of the past and the historical relationships between humans and plants. This interdependence makes humans deeply dependent on plants, to the extent that it shapes our memories. Research that began with an attentive exploration of children's prior-existing knowledge and innate connection to plants underscores the notion of an active child (Dewey, 2019; Edwards et al., 1998; Giudici, 2011) who actively constructs his or her own learning process. Such a child was not simply a passive recipient, but rather an individual capable of absorbing and retaining information about experiences with nature, demonstrating competence in recognising the profound interdependence between humans and living beings. The archive of memory (Demetrio, 2015), in the realm of children and parents, consisted of a nuanced interplay of different elements, encompassing spatial dimensions, animals and plants. This archive played a central role in the development and maintenance of a «language of affect» (ivi, pag.21), highlighting the extent of children's awareness of plants. The research focused on exploring the evolving relationships over time and the children's methods of memorisation in this specific context. Using narrative as a medium, the aim was to encourage individuals to retrieve and articulate the content held in their memory, facilitated by emotional support. Demetrio (2020) proposed that a cognitive biography serves as a narrative that describes the gradual formation of a cognitive profile over time. This complex process developed as a social history in which the human mind organises and constructs its understanding of the world. At the same time, it experimented with cognitive styles that prove to be the most appropriate and functional for its purposes. An emerging paradigm articulated in the form of a new ecology of thought that seeks to establish a connection between humans and the planet based on a sense of belonging rather than a purely utilitarian relationship (Guerra, 2021). This expansive perspective should foster an awareness of our inherent interconnectedness with the natural world and cultivate a deep sense of belonging and responsibility towards the environment. This transformative paradigm promoted a view of the Earth as an integrated system, emphasising the importance of fostering sustainable and harmonious relationships with our habitat. It advocated a move away from viewing the environment as a resource to be exploited in isolation and instead promotes an integrated and impact-conscious approach. In

essence, it represented a shift in perspective designed to reshape the way we perceive and engage with our planet, advocating a more respectful and supportive attitude towards the surrounding environment.

Methodology

The research integrated into a Ph.D. dissertation in Reggio Childhood Studies, a programme that embodies interdisciplinary and international perspectives aimed at elucidating the educational philosophy associated with early childhood that originated in Reggio Emilia. Located in the Emilia-Romagna region of northern Italy, Reggio Emilia is famous for its pioneering educational methodology, known as the ″Reggio Emilia Approach″ (REA). The Reggio Schools were founded after the Second World War by a group of women who wanted a better education for their children. Women and men worked together to build different schools to educate their children differently and created community schools where children could actively participate in their learning and knowledge (Borghi & Frabboni, 2017; Giudici, 2011). The school chosen together with the research group on the basis of its specific characteristics in the Institute Comprensivo Manzoni. This school, in collaboration with the Reggio Children Foundation, partner of the PhD course, has long been committed to promoting quality education in the Reggio Emilia area. Data collected took place on a consistent weekly basis from November to April. The data collected underwent categorisation and analysis using Atlas.ti, with subsequent percentages calculated using an Excel spreadsheet. About 67% of the pupils in the fourth grade of a primary school were born in Italy (Figure.1), while the countries of origin of their parents showed a remarkable diversity (Figure.2). In addition, the parents of Italian origin had very different cultural backgrounds, reflecting the distinct socio-cultural characteristics of the different regions and cities of Italy, from the far north to the south. An ethnobotanical approach explored the interests of both children and parents. This method investigated how people develop their relationship with plants over time, including aspects such as food, rituals, textile fibres and other modalities (Caneva et al., 2013).

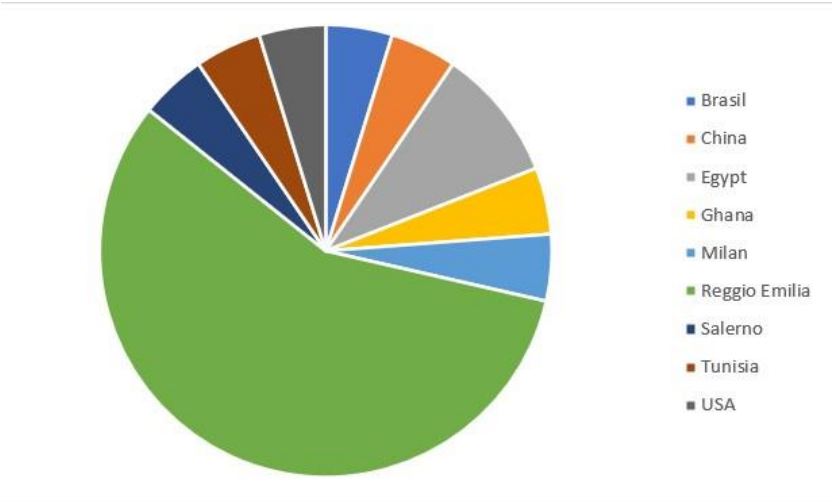

Figure 1: Place of birth children

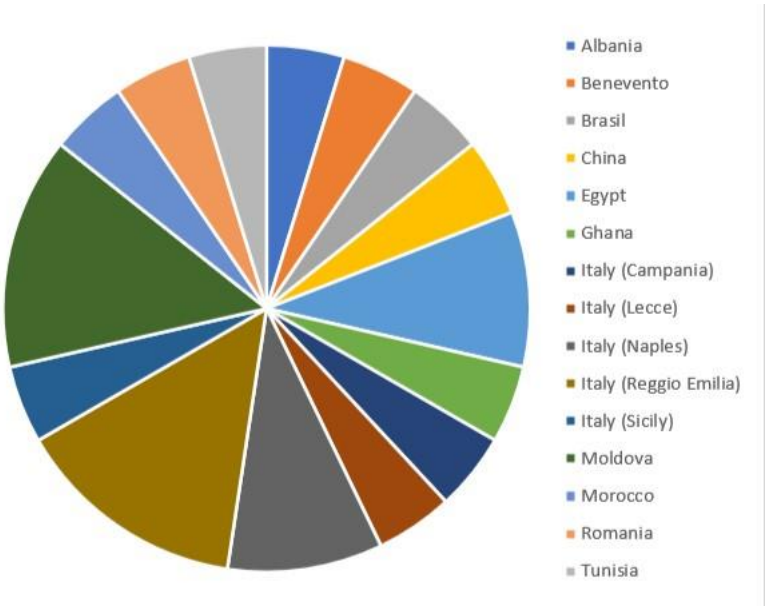

Figure 2: Parents' place of birth

The methodology used in this study draws on ethnography to facilitate the collection of data from the group of children and parents. Ethnographic research was instrumental in reconstructing events and elucidating the local educational environment through the inclusion of multiple subjects and perspectives. The active participation of children, teachers and parents in the descriptive processes framed them as co-constructors of meanings, interactions and practices (Pastori, 2017), fostering a small community that is inherently rich in knowledge and expertise. The inclusion of narrative inquiry introduced additional complexity into the research framework as the researchers took an integral role in the construction of the narratives. Throughout the fieldwork, weekly sessions of approximately three hours each were scheduled with the children. These sessions included initial interviews aimed at gathering information about their relationship with plants. Following each session, the children were tasked with processing the information discussed. This process served the dual purpose of refining and focusing the information in their individual memories as well as collectively as a group. With regard to parents, semi-structured ″one-to-one″ (Rubin & Rubin, 2012) interviews were conducted. This method allowed for the formulation of opening questions, which encouraged flexibility in the order and wording of subsequent inquiries. In this context, the researcher assumed the role of a facilitator, maintaining the interviewee's full focus. This approach was designed to give interviewees maximum freedom to express themselves. Data collection involved audio recording and subsequent transcription by the researcher. Thematic qualitative analysis was used for data analysis. This method, known for its theoretical flexibility, serves as a comprehensive research tool capable of providing a detailed and rich account of the data, albeit with potential complexity (Braun & Clarke, 2006). The initial phase of data organisation involved the management of coded files, available in both paper and electronic formats, using Atlas.ti and Microsoft Office software. This was followed by the systematic structuring of the data into categories, using Kellert's ″The Values of Life″ as a theoretical reference (Kellert, 2004; Kellert & Wilson, 2013).

Results

The narratives of both participants and researchers were intricately interwoven, forming a common narrative that evolved throughout the research (Connelly & Clandinin, 1990). This paper extrapolated the values that underpin the construction of green narratives by children

and parents. In particular, these stories evoked a deep sense of well-being. This sense of well-being, derived from reflections on plants, goes beyond mere physical contact and includes the recollection of memories associated with the plant kingdom. In addition, well-being is derived from the time parents spend with their children sharing experiences and moments related to plants. Illustrative examples of such stories from both children and parents are given in Table 1.

Children's memories	**Categories**
I like watermelons because my grandfather is in Moldavia and has lots of them. Every day we go to pick them_S.R	Utilitarian
In Egypt I have a vegetable garden and a lemon tree and a peach tree. The roses are somewhere else, and I remember my grandfather was alone there_A.	Moralistic
The lemon reminds me of my grandfather. This tree was given to my father two or three years ago, and now we have it here at home in memory of my grandfather, who has died_T.	Moralistic
Parents' memories	
No, I don't have any plants. I remember my mother with this vegetable garden and this hall full of plants_M. A.	Aesthetic
I spend my childhood among plants. I want to pass that on to my daughter_M. N.	Umanistic
We used to eat mint both for the cold and to add flavour to our food_F. L.	Utilitaristic

Table 1: Examples of conversations

The values that we have identified as shaping different aspects of the physical and mental well-being of human beings are outlined below:

Aesthetic: the physical beauty of the natural world is without doubt one of its most powerful appeals to the human animal. From the contours of a mountain landscape to the ambient colours of a setting sun, to the fleeting vitality of a breaching whale, the complexity of the aesthetic response is evident.

Dominionistic: experience of nature reflects the desire to dominate the natural world. This perspective may have been more common in earlier periods of human evolution; its occurrence today is often associated with is often associated with destructive tendencies, lavish waste and the plundering of the natural world.

Humanistic: human beings can experience intimacy, trust and a sense of relationship and kinship through the development of a deep sense of affection for the natural world. These feelings of affection and connection with nature and other living beings can have a mentally and physically rejuvenating effect.

Moralistic: perception of universal patterns in nature can provide a basis for a moral code. It can make one feel connected and committed. These feelings promote mental and emotional well-being.

Naturalistic: being in contact with nature, feeling a sense of curiosity and wonder.

Scientific: our physical well-being can be positively influenced by the practical knowledge that can be gained through scientific activities. Mental wellbeing can be fulfilled and enhanced through intellectual activities.

Symbolic: the use of nature as a symbol is perhaps most critically reflected in the development of human language and the complexity and communication of ideas fostered by this symbolic methodology.

Utilitarian: when we recognise our utilitarian dependence on nature, physical and mental well-being improves. Recognising our dependence on the natural world for resources such as food, water and shelter can help us feel grateful and connected.

The data analysed shows that the most frequently cited categories are humanistic and utilitarian (Figure: 3). The sense of trust, intimacy and emotionality that develops through contact with the natural world. Both mental and physical wellbeing is generated through connection with other living beings.

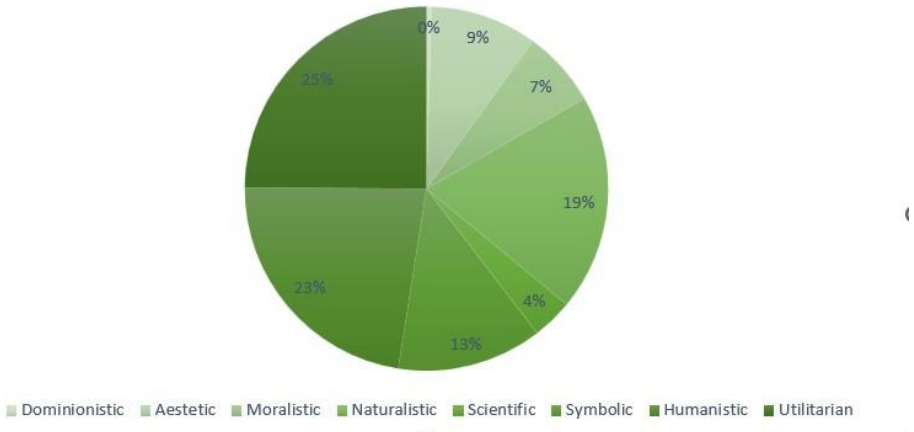

Figure 3: Categories of value

A visible process of narrative reconstruction emerged as children articulated their associations with plants. This reconstruction involved an imaginative effort to elucidate connections with plants that go beyond the utilitarian perspective of seeing them solely as a source of food. The narratives created by the children take on a profound meaning. They symbolise a deep sense of tranquillity derived from contemplating their intricate connections with the plants. These stories, therefore, encapsulate the essence of peace that comes from a thoughtful engagement with the plant world, transcending the mundane and taking on a more sublime

status. Children's fascination with plants was evident in their propensity to explore and understand species from different cultural backgrounds. This curiosity went beyond mere botanical interest. It included a keen interest in the origins and nutritional properties of food derived from these plants. At the same time, there was a palpable desire to rejuvenate neglected gardens in their domestic environments. This tendency to revive neglected green spaces was indicative of a growing awareness of environmental responsibility and a proactive commitment to improving the environment. In essence, these manifestations emphasised the multifaceted nature of children's connection with the plant world, encompassing cultural curiosity, nutritional research and commitment to ecological restoration. In the narrative, the intrinsic links with plants were meticulously delineated, giving rise to references to people, contexts, places and experiences that are intimately linked to specific moments. These memories, firmly rooted in the reservoir of prior knowledge held by children and parents, function as powerful tools to cultivate their curiosity and empathy. By weaving these plant-centric anecdotes into the fabric of their shared experiences, the stories served as conduits for a nuanced understanding of the interplay between humans and the botanical world. These deep-rooted memories served as catalysts, not only stimulating interest but also fostering an empathetic connection with the intricate ecosystems and diverse range of individuals and environments associated with these plant-related experiences. In essence, the narrative became a conduit for the transmission and perpetuation of knowledge, shaping a collective consciousness that goes beyond individual memories to foster a broader appreciation of the interconnectedness between humans and the plants.The examples provided (Figure 3) illustrate experiences related to diverse contexts, highlighting the richness and complexity of the relationships between children and the plant world.

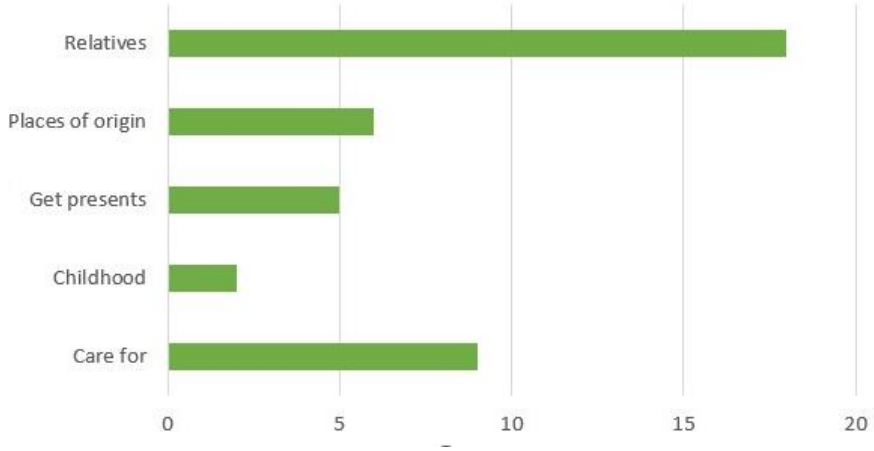

Figure 4: Relationship between children and plants

This report stressed the profound impact on the well-being of both children and parents as they articulate how their lives have been significantly improved. Shared experiences with plants emerge as not only valuable but transformative, with time spent together presented as an invaluable opportunity for mutual engagement. In this shared space, children and parents not only exchange anecdotes but also share practices rooted in their collective childhood experiences. These shared moments contribute significantly to an enhanced sense of well-being, fostering a positive environment where family bonds are strengthened through a shared appreciation of the natural world.

Conclusion and Discussion

How can children and parents be brought back to reconnect with Nature, with plants?
Through initiatives that explored children's and parents' interactions with plants and the intergenerational transmission of knowledge, there was the potential to foster a reinvigorated engagement with nature and mitigate what Kahn (2008) has identified as 'generational environmental amnesia'. The implementation of such projects should aim to rekindle ecological awareness and preserve the wealth of knowledge associated with plants, thereby acting as a mitigating force against the declining connection with the natural environment that has occurred over time.

What memories are preserved about plants?

Children and parents preserved memories of their relationships with plants and placed them in their own archives. These memories manifested as essential traditional knowledge to be passed on to future generations to deepen and consolidate our connection with nature (Kahn, 2008, cit. in Barbiero, 2012). The aim of the research was to stimulate children's and parents' interest in plants and to make them active subjects in the process of relating to the plant world.

What special moments do children and parents remember?

For both children and parents, memories were intrinsically linked to a variety of experiences that recall significant moments in their lives. These memories were contextual, arising from direct experiences, observations, listening to past stories. They were authentic emotional encounters that transform feelings into emotions (Barbiero, 2012).

Their memories, classified according to Kellert's values (S. Kellert, 2004), showed how the simple act of talking about plants is a great source of well-being. They also highlighted the important role that plants play in building positive relationships, both with others and with parents. Research demonstrated that a relationship with plants, in the various contexts in which they were present, promoted a solid sense of well-being in people. This approach recognised and nurtured the intrinsic human connection to nature for the benefit of both the individual and the planet as a whole. The primary goal was to inspire the field of education to cultivate a new form of connection and relationship with the natural world, ultimately contributing to a more sustainable future (UNESCO, 2021). It could also create new grounds for involving parents in primary education, where their participation is often underestimated. Parental involvement contributed to children's emotional and cognitive development. Such involvement provided parents with an opportunity to actively participate in their children's learning and to spend meaningful time-sharing precious moments with them (Edwards et al., 1998). It could be assumed that memory plays a crucial role in our relationship with nature, acting as a conduit for storing and recalling experiences, knowledge and emotions related to the natural environment. Through memory, past interactions with nature could influence our present and future attitudes and well-being. The integration of cultural perspectives was an essential means of gaining a fuller understanding of relationships with nature. Integrating nature-based education programmes into school curricula could contribute to the transmission of environmental memory. Involving students in practical and reflective experiences could strengthen the emotional connection with nature. In addition, sharing nature-related practices, traditions and memories between different cultural groups could promote a deeper mutual understanding and a shared awareness of the importance of environmental conservation.

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