

Sgatzos, A. (2025). Cultivating Food, Knowledge, Solidarity -Towards a School Garden in the Era of the Climate Crisis. *International Journal of Educational Policies*. Vol.19 (2), pp.87 - 100.

ISSN: 1307-3842

Cultivating Food, Knowledge, Solidarity- Towards a School Garden in the Era of the Climate Crisis

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Abstract

This research, conducted at a primary school in Mytilene, Greece, investigates the transformative potential of school gardens in education, particularly their role in reshaping perceptions of nature among students, including refugee and migrant populations. Rooted in a permaculture philosophy, the project explores the integration of sustainable practices into Critical Education, challenging hegemonic views of nature while fostering ecological awareness, inclusivity, and community. The school garden serves as an interdisciplinary pedagogical tool, bridging subject boundaries and blurring traditional distinctions between classroom and outdoor learning spaces. Historically contextualized within the evolution of school gardens, from practical agricultural use to their aesthetic and environmental roles, this research situates the garden as a site for addressing current ecological and social challenges. Observations highlight how active engagement in the garden fosters a deeper connection to nature, overcomes initial fears, and unifies diverse student groups through collaborative labor. The project underscores the role of school gardens in promoting critical consciousness, ethical ecological practices, and social integration, presenting them as vital tools within a broader narrative of transformative education amidst the environmental crisis.

Keywords: *School garden, permaculture, critical education, anthropology of education.*

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Introduction

The research was conducted in a primary school in Mytilene (Lesvos, North Aegean, Greece) with both general and refugee student populations for a period of two school years as part of an educational project titled "Working with Nature or Against It."¹ The research aims to investigate hegemonic perceptions of nature in Greek primary schools and explore whether and how these perceptions can be transformed through the implementation of permaculture, which offers a distinct philosophy of nature. Additionally, the research seeks to connect the reflective inquiry of anthropology with educational reflection through ethnographic recording. At the educational and pedagogical level, the goal is to correlate the research results with those in environmental education from other countries and to explore the potential integration of permaculture as a method and tool in Critical Education (Sgatzos, Tsiompanos, 2022).

The Emergence of School Gardens

The agricultural garden was introduced into education in the 19th century, in countries such as Austria, Belgium, France, and the United States. The creation of these early gardens finds its theoretical foundation in Rousseau and, more broadly, in the principles of the Enlightenment (Subramaniam, 2002, 1).

The Work School

An ideological and theoretical milestone for the function of the school garden was the perspective of the founders of the "Work School". In the early 20th century, pedagogical ideas in Europe and U.S.A. began to be redefined, and Herbartian pedagogy with its "lecture-based teaching" came under criticism, giving way to new pedagogical demands and the principles of the New Education and the Work School. Leading figures in this movement included John Dewey in U.S.A., Kerschensteiner in

¹ It is a postdoctoral research project in the Department of Social Anthropology and History at the University of Aegean, with the same title, emphasizing the transformation of students' perceptions of nature.

Germany, Maria Montessori in Italy, and others who shaped new pedagogical principles centered on the child rather than the teacher.

Views on the utility of the school garden varied among these founders of the Work School. A key debate emerged that would accompany the school garden throughout its historical trajectory: Should the school garden serve as a space for vocational—directly or indirectly—preparation, or as an environment for the child's self-expression? (Kapetanios, 2021, 31–35; Subramaniam, 2002, 2)

The Unified Work School in the USSR

Educators and policymakers of the early Soviet Union studied the Work School, particularly in its U.S.A.'s iteration (Therianos, 2017). However, they viewed it through the lens of the Marxist theory of labor. In the Unified Work School, the school garden was not merely another segment of the school or an alternative pedagogical activity but a component of a comprehensive educational process within the framework of polytechnic education² (Nozhko, etc, 1968).

From the Regency³ to Venizelos

As previously mentioned, the establishment of school gardens in primary schools began with the first legislative acts of the Regency. These gardens had a clearly practical purpose, aiming at the agricultural reconstruction of the country after the War of Independence (Kapetanios, 56–57). This practical approach continued roughly until the early decades of the 20th century, when the Educational Association emerged and introduced the principles of the Work School to Greece.

The Liberal governments largely adopted the proposals of the Educational Association, which altered the perception of the school garden. It began to serve not only a practical function but also an aesthetic purpose, along with an early, proto-environmental orientation (ibid., 65–80). The iconic book “The High Mountains”⁴ by

² The entire educational program of the Unified Work School, developed by the Pedagogical Department of the Central Educational Council of the USSR, presented in *The Unified Work School in Russia [The Official Educational Programs]*, A. Papakostas Library, Athens, 1927.

³ In modern Greek history, the Regency refers to the period from 1833 to 1835, spanning from the selection of King Otto until his coming of age.

⁴ “The High Mountains» by Zacharias Papantoniou, first published in December 1918 as a third-grade reader. At the time of its publication, the book sparked fierce reactions and was withdrawn in 1920,

Zacharias Papantoniou can be considered a foundational text for this new direction (ibid., 132).

The interwar period could be described as the golden age of school gardens in Greece. Simultaneously, there was a strong trend to link the garden to students' vocational prospects as farmers, a trend that became particularly prominent during the Metaxas dictatorship (ibid., 181, 186). However, the Second World War and the Civil War drastically changed this trajectory.

From the Postwar Years to the Present

In the postwar years, the school garden and its use in the educational process became a shadow of its prewar prominence. Those that remained did so out of inertia, and by the 1970s, they had nearly disappeared (ibid., 234).

In recent decades, there has been a revival of the school garden as an educational practice or as an "activity" within the framework of school programs. School gardens are now primarily incorporated into environmental education. The use of the internet and social media has facilitated the dissemination of pioneering efforts and experiments across various regions of the country (ibid., 271–273).

Towards a School Garden in the Era of Environmental and Capitalist Crisis

In recent years, there has been extensive discussion in the fields of natural sciences (e.g., geology), ecology, and social sciences about how human actions and overall presence on the planet influence the course and evolution of nature. These impacts are significant enough to be described in terms of a new geological epoch, termed the Anthropocene. (Tsing, 2015, 19)

This perspective has faced many objections. Some question whether human activity can truly be considered a force comparable to the major geological events that transitioned the planet from one geological epoch to another in the distant past. Others debate the temporal boundaries that define this geological epoch.

In the social sciences, a methodological critique has emerged, arguing that adopting such a perspective naturalizes social categories, introducing positivism into

along with other readers introduced during the reform. It was later reinstated as a school reader in subsequent years.

our relationship with nature through the back door (Perros, 2022, 112-113). Furthermore, it obscures the fact that humanity is far from a homogeneous entity and cannot be universally held responsible for the environmental and planetary impacts of the Anthropocene (Foster, 2023, 60; 2022, 26; Haraway, etc, 2015).

Therefore, we will not delve here into the debate about whether the term "Anthropocene" is appropriate. Instead, we will focus on its practical content, which we experience daily—namely, the climate crisis and its consequences. What role can the school garden play today? With all the tradition of its use, as described above, we cannot view it outside the broader context of the current environmental and capitalist crisis. For me, it is a field within the school environment where we can design a more comprehensive pedagogy. This pedagogy, through deep awareness of today's ecological deadlocks, can incorporate human labor not only as a means to halt destruction but also in the service of the restoration and regeneration of nature and humanity, aiming for critical consciousness and human emancipation (Freire, 2005a, 2005b). Therefore, what is needed above all is planning within a framework of ethical principles. Such an interdisciplinary and ethical approach is that of permaculture.

Human and Nature

Human perceptions of nature and their relationships with it have been the subject of ongoing philosophical and scientific inquiry. Beginning in the 16th and 17th centuries, the mechanistic view of the human-nature relationship dominated the "Western world," shaped by the early stages of capitalism and the philosophical and scientific ideas of F. Bacon, I. Newton, and R. Descartes. This relationship was largely understood in a static, ahistorical, and positivist manner within a dualistic framework that regarded both nature and humans as immutable categories (Liodakis, 1997, 81).

Opposing this dualism, Marx and Engels proclaimed the unity of humans and nature (Marx, 1974; Engels, 1991). Humans are both products of natural and biological processes and, simultaneously, "creators" of nature (Bitsakis, 1997, 50). As Engels emphasized, "Humans will relearn that they are one with nature" (Engels, 1975, 21).

In social anthropology, the human-nature dichotomy is expressed through the nature-culture binary. Based on ethnographic examples, social anthropology has explored the diverse ways in which people understand and think about the natural

world, perceive their position in relation to it, and interpret their roles and responsibilities toward other beings in the world through multiple and varied connotations (Kouravelos, 2009).

Today, ethnographic and theoretical literature challenges the meaning of "nature," including "human nature," as a concept. It examines how knowledge about nature shapes socio-cosmological collectives, dominant knowledge and action regimes, and the boundaries of identity and otherness (Descola and Pálsson, 1996; Descola, 2001, 2012; Rival, 2012). The ecological and environmental approach integrates humans into an active engagement with the components of their environment—flora, fauna, and landscapes. It explains cultural diversity through the variety of skills developed and embodied by humans through practice and education, avoiding the nature-culture dichotomy (Ingold, 2000).

How we imagine this relationship is deeply entwined with some of the key questions we all face today. "Do we work with nature or against it?" asks the course description for Anthropology of Nature at the University of Melbourne (University of Melbourne, 2025).

The reference to this course curriculum is significant because, in posing this question, it echoes the principles of permaculture (Mollison, 1998, 15), which originated in Australia. Permaculture, developed by Bill Mollison and David Holmgren in the 1970s, describes an integrated, evolving system of perennial trees, self-sustaining plants, and animals useful to humans. One of its primary goals is designing ecosystems that provide sustainable food, energy, security, and other material and non-material needs for humans and their animals while considering and incorporating the needs of wild flora and fauna (Powers, 2015, 6).

The foundational principles of permaculture emphasize collaboration with, rather than competition against, nature; extended and careful observation over hasty and unthinking action; the holistic approach to living systems for all their functions rather than solely for the yield of a single product; and the management of ecosystems in ways that allow them to evolve naturally (Mollison, 1998, 1–6).

The three ethical principles of permaculture today—care for the earth, care for people, and the redistribution of surplus—broadly reflect its understanding of the human-nature relationship and its impact on human relations through production.

Humans are envisioned as caretakers of the planet—a type of gardener or forester—working for the mutual benefit of nature and humanity (Holmgren, 2002; Veteto and Lockyer, 2013).

A Few Words About the Project

The school garden of the 1st Primary School of Mytilene was created as part of a school project that I conceived after attending a Permaculture Design Course in 2021. It was just after the covid pandemic, and in my mind, the whole issue was connected not only with the policies to combat it but also with the causes that triggered it. It seemed to me that since the world was no longer the same, my teaching could no longer be the same as it had been for so many years. The connection with my interest in sustainable food production seemed obvious. So, after collaborating with the School's Teaching Association, we created a 100 m² garden with raised beds. This was a school-urban garden in the center of Mytilene.

Using pallets, we created an outdoor classroom with a blackboard, and since the school hosts refugee students, UNHCR funded the necessary equipment. The project is connected to a variety of subjects, such as Mathematics, Language, and Natural Sciences. As an educator and social anthropologist, I quickly realized the need to keep an ethnographic diary from the first months of its implementation, and at the end of the first school year, the postdoctoral research I previously mentioned was approved.

The Appropriation of Nature through Garden Work

When the children first entered the garden, they were not only very cautious but even scared of the other beings present there (spiders, insects, worms). They did not hide their disgust towards creatures like worms or snails, which seemed very unfamiliar and strange to them. In interviews with parents as part of my research, this observation was confirmed for the same creatures that might appear in their home environment. The mother of one of my students said, "He could not sleep all night if he knew there was an insect in his bedroom." The same child stubbornly refused to touch a cicada exuviae that another classmate had found. A few months later, the same child was

collecting worms with his bare hands to put them in the worm compost bin, a change in behavior that his mother also noticed and reported in her interview.

Similar observations have been recorded for children who were disgusted not only by living creatures but also by mud, rotten leaves, and manure. These same children, some faster and some slower, overcame their aversion, and they stopped using gardening gloves even though I reminded them for safety reasons (mainly to avoid cuts). They started naming the insects (e.g., ladybugs, bumblebees, bees, geckos) and teased any child who continued to show fear towards them many times with a phrase I had used:

“Watch out... a dinosaur!”

Nevertheless, most of them still have reflexive fear responses when they suddenly see or hear, for example, the buzz of a carpenter bee.

Animals, Plants, Fungi in the Garden as Subjects of the School Setting

The non-human beings of the school garden appear as subjects of the school setting, meaning they are factors in a process of learning and education, rather than objects of study as they are, for example, in Natural Science classes. These beings, on both macro and micro levels, co-shape the garden simply by their presence. As gardeners, we interact with them, encouraging them (e.g., using compost for fungi and bacteria) or deterring them (e.g., using ground cover for weeds) to be there according to permaculture methods. The following dialogue is characteristic of this:

Student: Sir, in such a short time, we created this landscape...

Me: Did we create this landscape that we see all by ourselves? Didn't anyone else help?

Student: Well... no, there are also the existing trees, the worms and fungi that make the soil, the snails that eat our leaves...

Integration of Refugees and Migrants

In my class, apart from children of Greek origin, there are also children of migrants and refugees. Some of these students attend school regularly, while others come for a short period since Lesvos is merely a stopover for their families on their journey to their final destination. The garden seemed to serve as a unique field of integration for

these children into the school environment through their work in it. They showed eagerness to participate in tasks and enjoyed it, which was not evident during other school hours (their joy and willingness). Those who did not know the language at all participated in nature and garden-related activities in the classroom, even through drawings. Greek-origin children or migrant children with a good knowledge of Greek collaborated with them on garden tasks, something they did not do in other activities. Generally, the garden became a space where cultural differences were softened through common work, building intimacy relationships. This did not go unnoticed by my colleagues. A very experienced colleague observed about Mahmoud, a Palestinian student of mine: "This year, he is much more social... He has been in the school for many years now, but it seems the garden helped show that he can do things."

Time - Lesson – Break

Work in the garden, even if it did not involve purely gardening tasks, appeared to blur the distinction between lesson time and break time in the school routine. Often, after spending almost two hours in the garden, while the rest of the school followed the "lesson hour - break" pattern, the children would realize that "...we missed the break" but "...we don't mind because we're having a good time." This was also partly because the school garden is located away from the main school building, so we can't hear the bell signaling the break. The children stop the work assigned to them, or that they do on their own initiative, when they are tired or when they feel they have finished it.

On another level, transferring the teaching of subjects to the garden blurs the distinction in the timetable between the distinct hours allocated to each subject. While we might go to the garden to do mathematics (e.g., area), the variety of stimuli—compared to the "sterile" environment of the classroom—led us into discussions that could come from the teaching of another subject, such as Language or Civics. Here is a characteristic example:

Me: ...come on, let's find the area of the raised bed. What shape is it?

Student 1: A rectangle.

Me: Well done. How do we find it?

Student 1: Umm... base times height.

Student 2: Sir... we're having a lesson like in "The High Mountains,"* the book we're reading in class.

Student 3: ...and we are a team.

Me: ...do you remember what the book called this team?

Students:

Me: A community.

(The discussion continued about the community of children in "The High Mountains"⁵ and the differences with our own team for quite some time before we returned to the lesson on area.)

Space: Indoors and Outdoors

The function of the garden as an outdoor classroom includes elements of the classroom, such as the blackboard, resulting in the children naturally positioning themselves in a way that allows visual contact with it. At the same time, there was no restriction of individual seating, so where and how the children would sit became a matter of daily negotiation among them. They rarely asked for my intervention to arrange seating, something that frequently happens in the classroom.

Conversely, introducing garden functions into the classroom itself (e.g., pots with seedlings, an aeroponic tower) made students much more careful in their activities within the classroom. I can say that it was my first year without encountering problems of damage to the classroom space and equipment. The students transferred the attention and discipline they showed in the garden (e.g., not stepping on plants) to their movements within the classroom.

The students often commented on this integration. We discussed why the arugula in the aeroponic tower didn't produce seeds: "...because the bees don't come inside. It's not like us who both inside and outside do lessons and planting."

Conclusions

Although the research is still ongoing and the processing of ethnographic observations is in its early stages, the points presented above can lead us to some conclusions of both anthropological and pedagogical interest, which I summarize briefly:

⁵ This book was taught as part of the relevant project in the Language course.

1. A school garden in the era of the climate crisis can be a field for critical and emancipatory awareness for the entire school community. This approach not only showcases the potential for producing nutritious food using ethical design principles like permaculture. It also highlights the garden's role within the school context, where it recognizes non-human inhabitants as active participants. This serves as a counterexample to dominant practices in agriculture and broader environmental management.

2. On a more specific pedagogical level, through the tendency to abolish the dichotomies of inside and outside, class time and break time, it relativizes the hegemonic dichotomies of time and space within the Greek school setting.

3. It highlights labour (in the Marxist sense) (Marx, 1978, 190-191; Marx – Engels, 1997, 61) not only as a factor of learning but also as a factor of unifying the student population (general population, immigrants, refugees), pointing us towards the concept of "dwelling" according to Ingold (2016, 166-167). Here, I believe, a very interesting theoretical discussion opens up...

Epilogue

A question we need to answer today is what goals a school garden aims to serve. Is it simply about protecting the environment by fostering children's interest in nature and addressing the quality of our food? These two parameters are often intertwined under the umbrella of sustainability, a concept emphasized by related curricula.

Here lies the significant shortcoming of the entire discussion, as both above demands are not only general but also, through a journalistic-style recording of problems, the whole relevant discussion remain a mere reproduction of past efforts without integrating this endeavor into a broader narrative (like the Work School). (Sgatzos, 2023)

Also, the entire discussion about the Anthropocene in education cannot be limited to titles such as climate change and sustainability but must influence the entirety of the educational context and practice.

Therefore, in my opinion, a school garden should go beyond the market-driven environmental slogans of current curricula and school actions funded by ESIF⁶ through

⁶ European Structural and Investment Funds. ESPA in Greek.

Erasmus programs. It should be imbued with the entire historical tradition and integrated into the pedagogical arsenal of the Critical Education movement—a movement that examines the mechanisms of inequality production in educational systems. The environmental crisis does not affect people in the same quantitative way. It is not humanity in general that is responsible for it as struggling educators, we must seek and explore the cognitive boundaries within the school context and have tools to challenge them. Thus, my argument is that a school garden can be one of these tools.

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International Journal of Educational Policies

ISSN: 1307-3842

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