https://doi.org/10.36315/2023v2end139
Education and New Developments 2023

# ECODIDACTICS: AN ECOLOGICAL EDUCATIONAL PERSPECTIVE

**Raffaella C. Strongoli**
*Department of Education, University of Catania (Italy)*

## Abstract

Within an epistemological and didactic framework inspired by ecological perspectives in the Batesonian sense, the work proposes to advance an innovative framework of understanding and educational design of the connection between environmental education and the ecological perspective through the configuration of the ecodidactic perspective.
Through a discussion of an analytical methodological approach, the essay identifies and defines the peculiar aspects that make up the ecodidactic proposal: it is understood as an activist, democratic, eco-feminist education that fosters the development of empathy in a biophilic sense, aimed at fostering the development of ecological intelligence through ecoliteracy paths that aim to promote biospheric egalitarianism.
The intent of the work is to pave a way, to indicate a direction for a possible fruitful cross-fertilisation between ecology and didactics by outlining a guiding framework within which educational professionals can organically and consciously inscribe their activities.

***Keywords:*** *Ecodidactics, ecopedagogy, environmental education, ecological education.*

## 1. Introduction

The daily news reports return in alarmist tones and with increasing frequency the profound changes that human action is determining on the fate of flora, fauna and all the systems of the entire planet earth. The changes have been so radical that, as early as two decades ago, Nobel laureate in atmospheric chemistry Paul Crutzen coined the term *Anthropocene* to try to describe a scenario unprecedented from the past and with it the introduction of a new geological era (Crutzen & Stoermer, 2000). The adoption of a term that features the prefix anthropos to denote a geological era should prompt reflection on the meaning of such a consideration since it implies recognition of the weight that the choices made by humanity in environmental, industrial, pharmacological, and food policies have on the survival of entire ecosystems and, therefore, on the fate of the planet.

The way forward requires a change of perspective; a necessarily plural and complex perspective, in the direction of a wide-ranging ecological paradigm (Bateson, 1972; 1976), a true life model in which at the center is the recognition of the dependence of living beings on their relationships with others; dependence that is also mutual influence. The basic idea of the ecological model is that every living being takes shape in relationship: the individual is not in a superordinate position; he is co-constructor of the relationships that define him, and in this sense the approach is systemic. It is a relational paradigm that proposes to respect the multidimensionality and richness of reality and to recognize the subject as having a great responsibility in terms of its ability to accommodate the ways in which knowledge is constructed in a network of complex relationships among all the components involved without hierarchical perspectives (Mortari, 2020).

The adoption of a paradigm that can reverse the trend and replace the prefix *anthropos* with the prefix *ecos* for the era we are living in is clearly a far from simple matter since it is unthinkable to initiate such a significant change by working only on a few fronts such as the much-inflated ones of technological innovation (Strongoli, 2019); it is necessary to initiate reticular and articulated pathways capable of making evident the complexity of an ecological perspective declined in epistemological, gnoseological and educational terms.

Hence the need to question the educational-didactic models and practices that pedagogy is deploying to respond effectively to these radical demands for change.

In order to trace and attempt to develop the plural and networked dimensions that the development of an ecological educational perspective that is not exhausted in the mere transmission of

information requires, it is necessary to work on several fronts and, precisely in this direction, there are not a few solicitations coming from other scientific fields such as environmental psychology, ecology and physics. In particular, our thesis of building an educational perspective oriented and declined in an ecological sense can draw heavily on instances related to biophilia with regard to empathic aspects, ecological intelligence with respect to the development of cognitive skills and ecological literacy in terms of knowledge related to the consequences of everyday choices in order to then land on the definition of ecological educational scenarios within school contexts.

## 2. Biophilia, ecological intelligence and ecopedagogy in the ecodidactic perspective

The epistemological instances that converge in the ecodidactic model explicitly refer to biophilia, literally "love of life," proposed by the scientific hypothesis proposed in 1984 by U.S. biologist Edward Osborn Wilson to denote an empirical experience of human connection with living forms (Wilson, 2002). Although it is innate, according to Wilson, it has a phylogenetically adaptive set of learning rules, so it could form the physiological basis and psychic potential from which the naturalistic intelligence identified by Howard Gardner in his well-known classification of intelligences could emerge (Gardner, 1983; 1996). Biophilia and naturalistic intelligence can be seen as two poles of an educational pathway in which biophilia represents the older pole, the psychic energy that nurtures our relationship with the natural world, and naturalistic intelligence as the ability to use this psychobiological potential to shape caring and empathic relationships with the natural world (Barbiero & Berto, 2016).

With respect to the possibility of developing more expressly cognitive aspects in an ecological sense, the studies of one of the leading experts on intelligence, David Goleman, who believes that the next cognitive step to be taken by humanity will be the development of an ecological intelligence (2009), that is, the ability to make conscious choices endowed with a very high degree of harmony with the natural environment, prove to be very interesting. The traits of this new intelligence refer to man's ability to learn from experience, to interact effectively with the environment, and to learn about organisms and their ecosystems in order to understand the effects of human activities and exert changes that will enable them to lead as environmentally friendly a life as possible.

This intelligence is collective and shared in nature with both emotional and gnoseological connotations and, therefore, requires the development of emotional dimensions related to empathic feeling and the construction of an apparatus of knowledge related to the natural environment. To fine-tune the apparatus of this ecological knowledge, it is necessary to work on its construction (Capra, 2006) since knowledge about the planet and nature in an ecological and systemic sense is constantly changing. The main risk is that of content obsolescence that will already be outdated by the time students are adults and have to make conscious choices endowed with ecological harmony with the planet.

Ecodidactics is, moreover, inspired by one of the most beautiful and important lessons of Brazilian pedagogue Paulo Freire, ecopedagogy. The term, coined in 1972, refers to the desirability of configuring a true pedagogy of the Earth, in which the latter is considered on a par with those oppressed people condemned to a condition of exploitation that Freire denounced so much in his work (1970), and therefore notes the need to develop an ecological pedagogy understood as a long-range educational design that takes into account human and earth rights, social and environmental justice in equal measure (Gutierrez, Prado, 2000). With this fundamental lesson in mind, the emergence of an ecodidactic perspective is to be understood as the design of a set of educational experiences of education that are no longer simply environmental and not just eco-sustainable, but ecological. These experiences must have a broad scope, they cannot be limited to a transmission of knowledge, but must be oriented to foster the development of the empathetic feeling towards living beings, defined as biophilia according to Wilson (2002), and of that ecological intelligence of which Goleman writes (2009) in order to allow subjects in training to acquire a capacity to read reality inspired by Freirean ecopedagogy.

Ecodidactics is, therefore, a complex concept articulated according to the ecological and ecopedagogical matrices that inspire it; it is, moreover, a polynomial term since aspects related to categories of form and content are present in it. For an educational action to be said to be hinged within the ecodidactic perspective, in fact, it is necessary for it to be ecologically oriented not only with respect to content, referring to environmental issues, but also with respect to form, that is, to methods, strategies and the configuration of educational spaces.

## 3. Characteristics and indicators of the ecodidactics model

Didactics in the ecological sense is a didactics of the relationship between learning and teaching, which, in this dynamic, are mutually defined and constantly changing; it is a complex didactics, with a multifaceted and multidimensional nature and action, and it is systemic when it co-constructs its own

value horizon while operating in analytical and critical terms within an educational and ecological action that has value and is valuable. On the foundation of these themes is built the analysis that led to the identification of the characteristics of ecodidactic educational environments and the indicators that identify it.

From a technical point of view, the ecodidactic model aims to design learning environments that foster the co-construction of shared ecoliteracy paths between trainers and trainees, teachers and students. That is, the profound sense is not to let the contents of ecological education be passed on by others, because they are so changeable that they will already be obsolete in a few years. The work conducted so far has facilitated the identification of the following ecodidactic indicators:

- is animated and driven by utopia, which is its constitutive form in a generative and transformative sense;
- is action, thought and transformation;
- the values that animate it are biospheric egalitarianism, universal democracy, peace;
- all forms of life have value in themselves;
- plurality and pluralism are systemic in all forms of life, knowledge construction and all educational practices;
- at present, ecodidactics is constructivist, but there is NO epistemological status for human knowledge
- it educates to connection, to complexity, to the search for structures;
- the time of ecodidactics is that of learning, of singularity, of caring;
- the spaces of ecodidactics are those of relational learning environments;
- method is quality and the quality of ecodidactic research is identified with pluralism;
- educators and teachers who want to promote ecodidactics must do so in their daily lives inside and outside educational contexts.

Although the work is still in progress (Strongoli, 2021) and requires further development, we can identify some of the characteristics that identify educational spaces as relational learning environments. Ecodidactics proposes to connect ecology and didactics in a model that is able to hold together ecological complexity and the need to rethink teaching practices on the environment. The sense is that ecology takes the form of a method for ecological didactics. An essential element is the design of experiences that can be said to be educational (Dewey, 1938) in which the dual channel of form and content of the environment category can be constantly co-constructed.

Therefore, on the one hand, it is necessary to work on the constructive richness of the environment in a qualitative sense, that is, configuring teaching practices that are capable of allowing one not simply to do many things, but to think in many ways, that is, to be plural; on the other hand, in relational learning environments, it is necessary to understand the environment as a practice of situated knowledge. In fact, the environment is not the gateway to knowledge, nor the mediator, but, simultaneously and in a relational sense, object and subject, never attested to already given recipes.

The identification of the design models of such environments cannot but move from the characteristics of constructivist learning environments. The so-called three *C*s identified by Jonassen (1994), construction, context and collaboration.

The declination of these three instances in the ecodidactic configures construction and context as double agents in a relational practice on the choice and negotiation of the meanings and contents of instructional design. Knowledge is co-constructed and negotiated within the relational learning environment, which, therefore, must necessarily go beyond the idea of repertoire, understood as a list of knowledge and canon valid for all subjects.

The *C* of collaboration, however, requires a forward shift that transforms it into cooperation. For all partners in the relationship assume an equal degree of negotiation with respect to both strategies and possible culturally and socially situated solutions. The principles of pluralism and transactivity with an ecological and systemic imprint find their place in the realisation of a legitimised peripheral participation (Lave & Wenger, 1991), in which the more competent, and therefore central, members have the same decision-making involvement as the less experienced, and therefore peripheral, members. Therefore, the relevant teaching practices must in no way feed on control and power, but on decentralisation, sharing and, once again, relationship.

The implicit curriculum of such a didactic design, which takes on all the forms of a co-design, and the related collateral learning activated are linked to the recognition of the social practice of learning that is generated through involvement and belonging to a community. Cooperativism operates at an ecosystemic level, acting both in a didactic sense and with respect to the environment as a territory towards which it finds form in the construction of ecological communities of practice: groups of people, students and teachers who choose to be together to deepen their knowledge and improve their skills by

interacting, evolving together, building a shared and situated repertoire of artefacts, tools, routines, stories, languages, actions, beliefs and values (Wenger, 1998).

For the trainees to be co-constructors of ecological knowledge, it is necessary to activate a process of deep sharing and recognition of their heuristic and scientific possibilities through the design of learning communities (Brown, 1997) in which they act: multiple zones of proximal development; legitimised peripheral participation; distributed expertise, legitimising differences; reciprocal teaching and peer tutoring; flexibility and interchangeability of roles; variety of scaffolding; cognitive apprenticeship; reflective thinking and orientation towards autonomy (Varisco, 2002); challenging pathways in terms of procedure and purpose; practices of testing ideas through confrontation with alternative viewpoints.

The co-designing of such learning environments in the ecodidactic sense can take place in the peculiar form of the expansive cycle starting from the socialisation and sharing of tacit knowledge (Polany, 1966; Engeström, 1997), which in this peculiar configuration assume the role of object and subject of a dialogic relationship between models and then configure distributed knowledge practices on form and content becoming both explicit practices and internalised models of democratic and plural openness to ecological forms of knowledge. In this scenario, the double track of the category of the environment becomes an integral and integrated component of knowledge activity that is, at the same time, situated and distributed.

If, from an etymological point of view, to design means to launch something forward in order to follow its trajectory, then this is the sense that an ecodidactic design of relational learning environments takes on thanks to its connotation in a properly ecological direction. The defining aspects of relationship, action and cooperativism identified up to this point impose that it cannot be dogmatic or even less prescriptive; ecodidactic design can only be of adhocratic inspiration (Lipari, 2009), that is, situational and contingent.

Referring back to a sharing of material and personal resources, and due to its organic nature, the idea of community welcomes in denotative and connotative terms the ecodidactic proposal to make subjects act in a constructive, ethical direction, of civil commitment, of change in a generative sense.

Therefore, relational learning environments propose to have an emancipatory character in order to free from the coercion of the idea of the search for a single truth (Von Foerster & Pörksen, 1997), which has an absolute character. The road is, instead, that of a systematic exercise of doubt and interpretative pluralism, through the centrality of the relationship as a form of participatory knowledge with respect to its being given in terms of community and ecologically oriented cooperative practices.

Therefore, on the basis of what has been outlined very briefly so far, we can say that ecodidactics is not and does not want to be a simplistic reading, narrative and perspective of a return to Arcadia with bucolic scenarios of idyllic life far from technology and modernity. Ecodidactics does not mean rejecting science and its advances, but rather grounding them differently, changing the gaze on them and thus redefining educational scenarios, priorities and goals. Opting for the ecodidactic option is a choice of a political education, a partisan education that chooses sides, an education that is both utopian and of the possible.

## *References*

Bateson, G. (1972). *Steps to an Ecology of Mind*. San Francisco: Chandler Publishing Company.

Bateson, G. (1979). *Mind and Nature. A Necessary Unit*. New York: E. P. Dutton.

Barbiero, G. & Berto, R. (2016). *Introduzione alla biofilia. La relazione con la Natura tra genetica e psicologia*. Roma: Carocci.

Brown A.L. (1997). Transforming Schools Into Community of Thinking and Learning about Serius Matters. *American Psychologist*. 52, 4, pp. 399-413.

Capra, F. (2006). Alfabetizzazione ecologica: sfida educativa del XX secolo. *Eco, l'educazione sostenibile*. 1, 20-25.

Crutzen, P.J. & Stoermer, E.F. (2000). The "Anthropocene". *IGBP Newsletter*. 41, 17-18.

Dewey, J. (1938). *Experience and Education*. Indianapolis: Kappa Delta Pi; trad. it. *Esperienza e educazione*, Firenze: La Nuova Italia, 1955.

Engeström Y., (1997). Innovative Learning in Works Teams: Analyzing Cycles of Knowledge Creation in Practice. In Engeström Y., Miettinen R., Punamäki R.L. (eds.). *Perspective on Activity Theory*. Cambridge: Cambridge Univeristy Press, pp. 377-404.

Freire, P. (1970). *Pedagogy of the oppressed*. New York: Herder & Herder.

Gardner, H. (1996). *Intelligence Reframed*. New York: Basic Book.

Gardner, H. (1983). *Frames of Mind. The theory of Multiple Intelligence*. New York: Basic Books.

Goleman, D. (2009). *Ecological Intelligence*. London: Penguin Books.
Gibson, E.J. (1982). The Concept of Affordances in Development: The Renascence of Functionalism. In W. A. Collins (ed.), *The Minnesota Symposia on Child Psychology* (Vol. I) (pp. 55-81). Hillsdale: The Concept of Development, Lawrence Erlbaum Associates.
Gutierrez, F. & Prado, R.C. (2000). *Ecopedagogia e cittadinanza planetaria*. Bologna: EMI.
Jonassen, D.H. (1994). Thinking Technology. Toward Constructivist Design Model. *Educational Technology*. 34, 4, pp.34-37.
Lave, J. & Wenger, E. (1991). *Situated Learning. Legitimate Peripheral Partecipation*. Cambridge: Cambridge University Press.
Lipari, D. (2009). *Progettazione e valutazione nei processi formativi*. Roma: Edizioni Lavoro.
Mortari, L. (2020). *Educazione ecologica*. Bari: Laterza.
Polanyi, M. (1966). *The Tacit Dimension*. New York: Anchor Books.
Strongoli, R.C. (2019). Ecodidattica. Una proposta di educazione ecologica. *Ricerche di Pedagogia e Didattica – Journal of Theories and Research in Education 14, (3):* 221-243.
Strongoli, R.C. (2021). *Verso un'ecodidattica. Tempi, spazi, ambienti*. Lecce: Pensa Multimedia.
Varisco, B.M. (2002). *Costruttivismo socio-culturale. Genesi filosofiche, sviluppi psicopedagogici, applicazioni didattiche*. Roma: Carocci.
Von Foerster, H. & Pörksen, B. (1997). *Warheit ist die Erfindung eines Lügners: Gespräche für Skeptiker*. Bonn: Bild-Kunst.
Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge UK: Cambridge University Press.
Wilson, E.O. (2002), *The Future of Life*, Alfred A. Knopf, New York.