

10 Challenges for a Future Environmental Education

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Introduction

Environmental Education (EE) is conceived as a discipline that tries to give an educational response to the “environmental crisis” (De Blas, Herrero y Pardo, 1991, p.8). This discipline has developed, since its inception in the so-called Stockholm Conference in 1972 (Calvo and Gutiérrez, 2007, p.26), in its more than 40 years of existence, numerous plans, strategies and programs that have developed various actions aimed to restore an adequate person-nature relationship, which allows to overcome this environmental crisis, addressing the main environmental problems that threaten the planetary ecosystem equilibrium, in local and global levels. During these years it has sought to achieve the intentions for which it was born (Declaration of the United Nations Conference on the Human Environment, 1972). But reality, perhaps because it constitutes a dynamic and immensely complex field of study and interpretation (Palmer, 1998, p.8), the difficulty of fulfilling its objectives is clear, as revealed by Gigliotti (1990) or the White Paper of Environmental Education in Spain (CENEAM, 1999, p.9).

At this moment, the environmental situation is very different from that intended by the EA, perhaps because there are no definitive answers or infallible advice (Palmer, 1998, p.8). Or maybe because of the strange paradox that most people agree to live sustainably, but formal education programs do not prioritise this intention. It seems that a battle is established, more than the EE is at the heart of this education (Palmer, 1998, p.8).

Environmental problems do not decline, but progress. There are several dangers that continue to threaten the complex biological processes settled on our planet: the global neoliberal economic system, where “environmental rationality confronts the fatal strategies of globalisation” (Leff, 1996), unique thinking, individualism, lack of participation in the community, loss of values, loss of biodiversity and human diversity (Novo, 2003, 2006), increasing and invasive pollution. The current pressing dimension of the old and the emergence of new environmental problems, such as global warming, places us in a still worrying-scenario that generates a perception of immobility or even regression in the achievement of the objectives intended by the EE. This reality invites us to ask ourselves: Has all the work done during these years being useful for anything, all this effort, made by so many people? Are the objectives of the EE really being achieved? Are the environmental sensitivities produced by your programs potent and lasting?

Are behavioural changes and new environmentally appropriate habits occurring? Are pro-environmental values held in people? Is the meaning and importance of the link between person-nature understood?

Despite the numerous actions carried out by the EE, the ecological alarm continues to be active, highlighting the difficulties that Redclift (1987) was already making in the ecologically sustainable development model. The current reality is that the world is advancing inexorably in a destructive direction; it advances towards a consumer globalisation, where the culture of discarding prevails at ease, with a growth that seems to have no limits (Meadows, Randers and Behrens, 1972); moves towards a solely utilitarian vision of natural resources, moves towards an excessive urban polarisation, towards an abandonment of traditional agro-systems; moves towards a loss of values of biological and cultural diversity; it advances towards a growing dehumanisation of the natural, towards an insane global person-environment relationship (Riechmann, 2004).

Therefore, due to the evolution and new dimension that environmental problems, including obviously social ones (Novo, 2003), acquire today, there is a need to give a boost to the EE, even to look for new ways for an alternative EE (Tsevreni 2011).

This EE must incorporate a reflection that includes the main challenges that must be faced in the s. XXI to continue advancing in the achievement of its proposed objectives.

10 challenges for the EA of the future

EE, in order to help focus their intentions on the reality of the 21st century and with the idea of emphasising aspects proposed since the beginning of the EA (UNESCO UNEP, 1994), but perhaps not yet sufficiently developed (Gigliotti, 1990). The aim is to influence already known or innovative proposals (Guruceaga, 2001, p.15) that deepen the awareness processes, the meaning of the contents, the learning methods, and the implementation of mechanisms of pro-environmental action. Following the recommendation of (Palmer, 1998, p. 10) that invites in each country to analyse, review and propose ways of progress of the EE, it is intended to advance this intention with the following challenges of the EE for the future:

1. Learn to be
2. Values education: value care
3. Adress complexity
4. Appropriate sequence: “think-decide-solve”
5. From local to global
6. Participation

7. Action Research
8. Emotional intelligence development
9. Natural intelligence development
10. Ecological spiritual intelligence development

Learn to be

Approximately in the last forty years people have gradually included in our lives the culture of “*having*” and we have lost in a general way many of the values that sustained the culture of “*being*,” which curiously was very supported by the values of the populations rural areas, which maintain a much closer link with the natural. This culture of having unfortunately leads to a mistreatment of the land, because we see it as a commodity that belongs to us (Leopold, 2005). The market has created a culture of unbridled consumption, much more intense in urban populations. The desire to possess affects us, the competition to see who “owns” more, the social valuation towards the one that has the most has spread in our western societies. This possessive vision helps in no small measure the propaganda, which creates us continuous needs. We, using our freedom, focus our attention on them, often occupying much of our time.

How different is this other approach: the approach of trying to “*be*,” to grow to be, to be formed to be, to focus our lives towards building ourselves in the best possible way, to try to reach our human plenitude of what we can reach to be, to develop our capabilities to the maximum, for ourselves and for others. This approach is the right one, because only being really gives meaning to our life and initiates new paths that the culture of having cannot provide.

The dangers of *having* are many. This culture is not harmless to the environment. The incessant demand for products and the consequent and wasteful “culture of discarding” (Santa Sede, 2015) does not cause a zero environmental cost. On the contrary, what causes is a continuous deterioration of the environment, a damage in the form of environmental impact that often reaches irreparable dimensions.

This aspect is not trivial. Novo (2003) includes it as one of the conceptual bases of the EE. Also Delors (1996) has included it as one of the four pillars that support education for the 21st century. *Learning to be* includes reconsidering the way we relate to the environment and the link we establish with it (Leopold, 2005). It is not necessary to delve more into the importance of this concept, but to emphasise that it can be key to the significant decrease in the footprint that each of us causes to the environment and in the way we understand our relationship with nature.

Learning to be (Delors, 1996) means, among other aspects, working to improve aspects

that involve the development of multiple intelligences (Gardner, 2010) such as self-knowledge (intrapersonal intelligence), self-esteem, emotional intelligence (Goleman, 1996), adaptation, social skills (interpersonal intelligence), the relationship with the environment (natural and spiritual intelligence), the acquisition of values. Pope Francis believes that “buying is always a moral act and not just an economic one” (Holy See, p.64) and that we have to grow up with “sobriety” and not “be saddened by what we do not possess,” since “You can need little and live long” (Holy See, page 68).

Values Education: Value Care

Directly related to learning to be, it is necessary to build an ethic that makes us relate adequately to the Earth, but this is not easy with today’s lifestyles. Leopold (2005, p. 154) describes this difficulty well:

The most serious obstacle that prevents the development of an ethic of the earth may be the fact that our educational and economic system has turned its back on a genuine awareness of the earth, instead of heading towards it. Modern man is separated from the earth by many intermediaries, and by innumerable contraptions. He does not have a vital relationship with her.

Therefore, education in values can be one of the pending subjects of the EE. Already in the publication “Trends in environmental education since the Tbilisi Conference” it was noted that:

(...) The content of environmental education programs has turned too much around theoretical cognitive elements; the affective (values, attitudes) and technical problems still occupy a very small space, even marginal, in the contemporary practice of this education. (UNESCO UNEP, 1994, p.21)

This is a difficult, complicated challenge (Subirats, 1999, p.177), for many reasons, including because the values are long-term. Also, exactly what values do we have to promote? Although there are lists of the values that the EE proposes to promote (Caduto, 1992), we could say that the basic value that many others of the proposed ones disseminate is respect value (Carreras et al., 2003, page 199). Respect is the basis of many other values such as solidarity (respect for the needs of others) or responsibility (respect, not to what I want, but to what has to be done), but above all, when together with love, it gives rise to value “care”, which goes beyond respect. Care value is key to EE because it implies a commitment, a concern, a responsibility with love towards what is cared.

How can we educate in values, for example in a key value such as care? Values are shaped as concrete attitudes are put into practice in a situation. In turn, putting concrete

attitudes into practice helps reaffirm and shape that value. In addition, the value will allow its generalisation in other situations, putting into practice specific careful attitudes in different situations. That is why the conformation of a value system takes time. It occurs throughout the life of people and is associated with several contexts, such as family, school and social.

Perhaps it is the difficulty of designing specific programs of education in environmental values (EEV) (Caduto, 1992) and its character of long-term conformation, some of the reasons that have left a long way to go in this field. However, the education of values is fundamental because they intervene directly in our decision-making, trigger our actions that put into practice attitudes, which, by repetition, can shape our habits: "When attitudes become easy to execute we have a habit . (Carreras et al., 2003, p. 22). That is why the EE has the challenge of providing an education in environmental values that trigger pro-environmental behaviors that, once shaped into habits, favor an adequate person-environment relationship.

For example, if someone decides to turn off the light, it is because in their value system the value of respect for the environment and also the value of respect for others can be present. By turning off the light, that attitude helps to reaffirm the respect value in our value system. This more reaffirmed value will make it more likely that I turn off the light at other times, to create a habit, or to generalise respect in other situations, for example not lighting a fire when I go to the field because I can destroy the environment of people.

Discovering the values that intervene in our daily actions, for example through the value clarification methodology (Caduto, 1992), is a convenient exercise to discover the values that are behind our actions, so we make sense of them and we can improve the coherence of our acts. (Gutiérrez 1995, p. 153).

The reality is that it is not common to find these education programs in environmental values (EVA). However, this is a key purpose. Perhaps we have focused a lot on environmental programs focused on the concepts of environmental problems: knowing the species, the consequences of pollution, and obviously, this is necessary. But perhaps it is necessary to undertake in a more specific way the design of EVA programs. Specifically, the design of EVA programs that promote respect value.

Address Complexity

The environment is a complex system, more when considered at a planetary level. Complexity is an ecosystem characteristic that, in general, constitutes a measure of its maturity. The number of biotic and abiotic elements that an ecosystem includes and the multiple relationships that they include make complexity. Addressing complexity

in the EE is a key aspect to understand that everything is related to the environment and that in the face of an environmental problem there are no simple solutions, but when there is an environmental mismatch that we can describe as damage or problem, solutions are also complex and usually require multidisciplinary actions. This is explicitly stated already from the Tbilisi Conference, where it is recommended:

(...) that individuals and collectivities understand the complex nature of the natural and man-made environment resulting from the interaction of their biological, physical, social, economic and cultural aspects and acquire the knowledge, values, behaviors and practical skills to participate responsibly and effectively in the prevention and solution of environmental problems and in the management of the issue of the quality of the environment. (Intergovernmental Conference on Environmental Education, Tbilisi, USSR, Final Report, 1977, p.28)

It is about breaking with the idea that in front of a mechanism of environmental aggression there is a simple solution that “repairs” the damage. In no way is this the case. The solutions to environmental problems are also complex, as complex are the mechanisms that regulate the resilience of these ecosystems.

Obviously, due to the complexity, the precautionary principle should prevail in human performance. It is better not to touch what we do not know. It is not simple, but complex, to recover the initial situation or to minimize the damage. Better to know the complexity and then plan the actions in the middle, foreseeing their consequences.

Educating in the convenience of knowing the complexity is fundamental, among other things to be aware of this difficulty of “fixing” the imbalances that people are causing. It means knowing the importance of the environmental problems we cause, in all its multidimensionality. It means using a syncretic vision of reality. Humanity, in its eagerness to know everything and to control everything, still feels very far from being able to interpret the numerous and intricate relational processes that intervene both in the ecosystem life and in the intricate mechanisms of its regulation in the face of changes. We could consider, in the words of the Argentine genius, that “... the machine of the world is very complex for the simplicity of men” (Borges, 1960, p.185)

This is a paradox. The EE is facing a challenge here because it is not easy to explain and educate in something that we still do not understand in depth, such as complexity. This is a difficult concept to communicate for all ages, especially children. However, not introducing this content in environmental programs can favor a simplistic view of solutions to environmental problems and, therefore, not consider them in their entirety.

So we can find ourselves facing a situation of “whiffs that bite the tail”: We have environmental problems. These problems are also addressed through educational

measures, through EE programs. The concept of “complexity” is not included in EE programs. Therefore, we do not teach in complexity because it is still very unknown, difficult to understand and to explain, to teach and to learn. That is why people do not understand the value of complexity and its importance in the repercussions of environmental problems and their solutions. And that’s why it’s easier to continue causing environmental problems.

Education in complexity includes educating in a preventive vision, using syncretic methodologies and applying the precautionary principle before performing any significant action in the medium. To help educate in this idea we may use examples of not having contemplated the complexity of the environment. For example, the introduction of an allochthonous species such as the rabbit in Australia generated many other environmental problems. In these cases the complexity of that ecosystem was not foreseen, breaking the ecological balance between the species that made it up.

Appropriate Sequence: “Think-Decide-Solve”

Learn to Think

For EE, it is convenient for people to encourage competition to learn to think, formulated also as a critical spirit (Giordan, 1993), since they can be freer, less manipulable and can better understand the transcendence and consequences of their actions and causes of environmental problems and their possible solutions. This competence to learn to think is conceptualized as a key aspect in EE (Giordan, 1993; Novo, 2003), but its explicit programming in EE programs is infrequent. We are again faced with a programmatic difficulty. Programming actions and methodologies to develop competence learning to think is not easy. This competence is not explicit as a key competence in regulated education systems, although it can appear transversely in many educational instructions. The recommendation is to design specific programs that formulate the objective of developing this competence through specific activities. The challenge is to design educational instructions that develop aptitudes for obtaining truthful and reliable information, in order to analyze it, synthesize it and draw conclusions. It is intended that people adopt a critical attitude to encourage a precise analysis and an appropriate ordering of the different factors that intervene in each situation. We can mention here the correspondence of learning to think (McGuinness, 2012) with the learning to know proposed by Delors (1996) that includes cognitive skills such as being critical, informing oneself, interpreting, self-learning and creating knowledge.

Decision Making

Directly related to the previous point, this challenge is another of the key aspects of EE conceptualized at its inception (Giordan, 1993). But decision-making remains a pending

issue in many environmental programs, mainly focused on environmental conceptual content, awareness raising through experiential education, but which do not end with a free decision-making exercise. The challenge is to include this decision competence in the EE programs, exercising and training this competence, integrating values such as respect and responsibility, together with the already exposed competence to learn to think. That is, the competition to learn to think should conclude with an appropriate decision-making process.

Problem Solving

The problem-solving is considered a key aspect since the beginning of the EA in the Tbilisi Conference. There, it is argued that EE should guide individuals towards solving problems “(...) through a global approach, based on ethics, rooted in a broad interdisciplinary base” (Novo, 2003, p.47). Reality, however, shows us that there is much left to advance in this “resolutive” ability. Normally it is advisable to program instructions that include methodologies of “role playing” in simulation games (Taylor, 1993), where it empathises with the different points of view of the various agents that appear in front of an environmental problem. In problem-solving (Camino and Calcagno, 1995), communication strategies, group dynamics techniques, emotional intelligence, creativity, truthful information management, etc., are put into play. The dynamic finally leads to the proposal of adequate solutions that take into account the multifactorial and complexity presented by environmental problems. To solve well you have to know well, think well and make correct decisions. The “think-decide” process is continued, ending the “think-decide-solve” cycle. It is this three-factorial educational process that can prepare the citizen to become an agent of change, active and participatory, of the environmental problems that occur in his community. This trinomial may correspond to another of the pillars that Delors (1996) proposes for 21st century education: “learning to do”.

From Local to Global

Most people live in a specific place, so they usually live, develop their activity, in a specific community and space. This local dimension means that we can lose sight of the fact that many environmental problems are caused by the addition of local impacting actions (for example, water pollution, global warming). In these cases, the problems acquire a global dimension. That is why the environmental effects (both positive and negative) of our actions must be considered both at the local and global scales. And that is not easy, it requires a global perspective mind.

In order to achieve a global perspective, it is convenient to promote networking, to “get involved” with other proposals and improvements made in other geographical places that make us open our minds and focus our environmental improvement objectives

both locally and globally. Seeing that our daily pro-environmental actions can favor the environment of our place, but also that of many other places can be a motivating factor, a reinforcement to be able to build personal habits that contain a background of global, planetary mentality. This promotes the acquisition of a holistic, global, planetary vision that favors the idea of a global village and the personal consideration of the world's citizen.

Already in the field of formal education, it is proposed that the perspective of environmental issues be worked from several scales, promoting local knowledge and universal knowledge: "(...) examine the main issues of the environment from a local perspective , regional, national and international, so that students can know the environmental conditions existing in other geographical areas. "(Glasgow, Robinson and Jacobson, 1995, p.17)

Participation

Despite the great advances that have been observed in recent years, participation remains one of the great challenges for the resolution of environmental problems:

We have made little progress, if we think how far we still are from a society in which people actively participate in the solution and prevention of problems. However, the path traveled and the critical reflection are the best basis for future constructions. (CENEAM, 1999, p 4)

The cases of politicians and technicians who make decisions without counting the community, environmental conflicts resolved unilaterally or without taking into account all the people and agents involved are still a lot. Non-consensual solutions do not help meet the objectives of the EE or solve, especially in a long-term vision, the specific environmental problems at the local level. Participation means being serious with everyone, putting yourself in the shoes of others, understanding all the interests and needs that come into play in an action or environmental problem, taking them into account, so that among all of us we can find the best environmental management. Obviously, we are very far from this situation. Participation is related to learning to live in community, which includes skills and values such as: communication, respect, sociability, cooperation and solidarity. Participation is also educated (Ferreira and Davis, 2012) and it is convenient to include this competence among the intentions of EE programs, since it constitutes another of the pillars of 21st century education, formulated as "learning to live together" (Delors, 1996).

Action Research

Further progress should be made in this methodology, conceptualised as adequate for

EE (Giordan, 1993). The scientific method will help to know the scientific basis that intervenes in environmental problems and will provide accurate information about the specific problem. It is with this information that decisions must be made that generate concrete actions that help to restore or correct an environmental problem or, at least, minimise the environmental impacts generated. But in turn, we must not forget to include other forms of knowledge, especially humanistic, which do not use the scientific method, but other methodologies and which may be equally valid.

Emotional Intelligence Development

Emotions intervene directly in learning (Novak, 1978; Gowin, 1981), integrated in the trinomial “feeling, thought and action,” making them more significant. That is why the emotional world is an aspect that plays a decisive role in environmental awareness, favoring the acquisition of pro-environmental behaviours and commitments. The development of people’s emotional intelligence (Goleman, 1996) can be a determining factor in the need to achieve a more powerful and integral environmental awareness (Tsevreni, 2011).

Among the possible emotions, we want to highlight here the fear. Fear, generated by the catastrophic vision of environmental problems, is a widely used emotion and is usually spread by the media when dealing with environmental issues, possibly because generating fears and alarms can generate more audience. But fear is not convenient because it can cause us to lower our arms against the magnitude of environmental problems, which gives us a feeling that we cannot do anything in front of them. This sterile catastrophism (Morduchowicz, 2001) can contribute so that we do not react to environmental problems. That is why it is convenient to study the reality of environmental problems well, in its just dimension, promoting what each person can do to contribute to their solution.

Natural Intelligence Development

The EE aims for a comprehensive education of people. That is why it must include in its programs education in all types of intelligence proposed by the theory of multiple intelligences formulated by Gardner (2010). Many educational centers are currently incorporating the challenge of educating in the development of multiple intelligences. Among them, more specifically in EE, education in the so-called natural intelligence is convenient. This intelligence tries to foment the capacity of the person to relate and to know the natural environment. That is why it is a challenge for the EE to design specific educational instructions that aim to develop this intelligence. With its promotion, the knowledge of the environment and the person-nature relationship is made possible.

Ecological Spiritual Intelligence Development

As has been mentioned, the EE proposes the integral development of people, and does so by taking into account the holistic and interdisciplinary nature (Giordan, 1993) that presents reality. However, the inclusion of the spiritual dimension of people in this integral education is infrequent. Despite this reality, Gardner (2010) shows us the existence of a transcendent intelligence in his renewed theory of multiple intelligences. Other authors (Wolman, 2001, Torralba, 2011, Castro, 2012) call it spiritual intelligence. Wolman (2001, p.1) defines it as: “the human capacity to ask about the ultimate questions of the meaning of life and the simultaneous experience of the complete connection between each one of us and the world in which we live” (translation) de Castro, 2012, p.29). Pope Francis in his Encyclical *Laudato si* ‘speaks of “ecological spirituality, for what could be more specifically called ecological spiritual intelligence.

Despite the advantages that this type of intelligence can provide (Keniger, Gaston, Irvine and Fuller, 2013, Kollmus and Agyeman, 2002), the values of neoliberalism and materialism / prevailing consumerism, do not favor the development of this type of intelligence, rather on the contrary, leading Occident into a spiritual desert. However, spiritual values have much to do with the conservation of nature (Mallarach, 2008). In general, areas of the planet that have preserved spiritual values have a better preserved environment. However, authors such as Keniger et al. (2013) recognize the scarcity of studies related to the nature-spirituality binomial (around 5% of the total of studies carried out on nature).

Spiritual intelligence can help in the environmental awareness of people in a powerful and lasting way, favoring the acquisition of environmental commitments, as occurs with environmental epiphanies (Vining and Merrick, 2012), which can be considered as a type of Significant life experiences (SLE) (Chawla, 1999; 2001, Tanner, 1980). These experiences, with a spiritual component, can provide a qualitative change that advances the EE in the achievement of its conservation and humanistic objectives. Aims, as proposed by Palmer (1998, p. 10).

Ecological spiritual intelligence can also influence the understanding and experience of the link between the person and nature (Abram, 1996, 2010, Barnhardt and Kawagley, 2010, Clayton and Myers, 2015, Williams and Harvey, 2001). Design specific EE programs with concrete actions, the creation of EE facilities as centers of environmental meditation or centers of ecological spirituality that favor the contemplation of nature, renewing our sense of wonder (Carson, 1956, p.145) in the face of beauty and continuous wonder that nature presents us at every moment, can favor the valuation and conservation of our beloved environment. “We only become ethical in relation to something we can see, feel, understand, love, something in which we have faith in some way”.

Conclusions

The EE of the 21st century must advance in the improvement of its educational strategies, focusing on the aspects that may be relevant in the fulfilment of its objectives. The 10 challenges presented intend to help to undertake this task.

To achieve the objectives of the EE it is convenient to influence the promotion of the culture of “being” as opposed to “having,” promoting a life project based on the knowledge of the functioning of nature and the actions that can degrade it. A life project that conforms to a code of ethics, according to Leopold’s criteria (2005, p.145): “We only become ethical in relation to something we can see, feel, understand, love, something we have faith in, somehow”. Care value is configured as a key value for the conservation of the environment.

The challenges presented are intended to promote decision-making based on the truthful knowledge of environmental problems and natural dynamics, without using a catastrophic vision, carried out in a manner consistent with our value system (made up of environmental values). Decision-making that helps solve environmental problems in our community, integrating a local and global perspective and encouraging our participation and that of all the agents involved in the community.

The EE must promote the integral education of people, which includes an interdisciplinary vision of reality, including the emotional world. The more we educate in the complexity of reality, including the attitudinal, axiological and emotional contents that it presents, the more faithful we will be in understanding the world and intuiting the true dimension and repercussions of the environmental problems that people generate.

We cannot remain only in the utilitarian vision with nature. We cannot think only of nature as a resource to our service. It would be too reductionist, too poor. Nature and our relationship with her is much more than that. The development of intelligences that intervene directly in environmental conservation, such as natural intelligence and spiritual intelligence can help us to better understand that person-nature bond. Advancing the understanding of this link can help in achieving the objectives of the EE.

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Citation:

Echarri, F. & Echarri, V. (2019). 10 challenges for a future environmental education. In M. Shelley & S.A. Kiray (Ed.). *Education Research Highlights in Mathematics, Science and Technology 2019* (pp. 195-210). ISRES Publishing, ISBN:978-605-698540-9.