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ENVIRONMENTAL EDUCATION IN ECUADOR: CHALLENGES AND TRANSFORMATIONS

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Abstract

The main objective of this chapter is to reflect about the challenges and transformations that Ecuador faces on Environmental Education. In 2008, the new Constitution recognized the Rights of Nature, in order to restore the ecological footprint. Good Living is a philosophical and political worldview of kiwicha indigenous peoples of Andean Region, where human beings are interconnected with our planet Earth and the whole cosmos. For this reason, the work uses the transdisciplinary methodology to integrate scientific knowledge with ancestral wisdom, in order to combine an ecology of knowledge. As result, the research aims to develop a critical environmental awareness to advance in the National Environmental Education Plan. Some eco-pedagogical projects have been formulated at the National University of Education of Ecuador to contribute in the achievement of the Sustainable Development Goals lead by the United Nations for the year 2030. As main conclusion, Environmental Education in Ecuador seeks to bio-literate citizens to face the complex civilizing challenges of the Anthropocene, by teaching how to feel-think-act in harmony with the co-evolutionary processes of nature.

Keywords: *Environmental education, good living, eco-pedagogy, bio-literacy, transdisciplinary.*

1. Introduction

Currently, different representatives of the Ministry of Education, the Ministry of Environment, the National University of Education (UNAE) and the University of IKIAM (among other actors), are collaborating to develop and implement the National Environmental Education Program. In this context, the main objective of this chapter is to reflect about the challenges and transformations that Ecuador faces on Environmental Education (EE). A transdisciplinary methodology is used to combine an ecology of knowledge within scientific knowledge and indigenous spiritual wisdom. Promoting and strengthening environmental awareness in the educational community implies an integral and holistic approach whose epistemological focus is based on emotions, values, altruistic sense, innovation, and educational quality. Training a responsible citizenship to face socio-ecological challenges is fundamental to build a society committed to the welfare of present and future generations (Freire, 1971). For this reason, this chapter reflect on the experiences of public policies carried out in Ecuador on EE to help achieve the Sustainable Development Goals (SDGs) lead by the United Nations for the year 2030 (United Nations, 2015).

2. The rights of nature in the 2008 constitution and the national plan for good living

Ecuador lives a unique historical period: in a short time have taken giants steps. The Law on Environmental Management of Ecuador was created in 1999, and Article 2 states: “environmental management is subject to the principles of solidarity, co-responsibility, cooperation, coordination, recycling and reuse of waste, use of environmentally sustainable alternative technologies and respect to traditional cultures and practices.” Since then, a progressive process of environmental awareness has been developed, that has been translated into different state policies, scientific research, formal and non-formal education programs, as well as greater dissemination in the media. The current Constitution of 2008 recognizes the Rights of Nature in its seventh chapter, as follows:

Article 71. Nature, or Pacha Mama, where life is reproduced and occurs, has the right to integral respect for its existence and for the maintenance and regeneration of its life cycles, structure, functions and evolutionary processes. All persons, communities, peoples and nations can call upon public authorities to enforce the rights of nature. To enforce and

interpret these rights, the principles set forth in the Constitution shall be observed, as appropriate. The State shall give incentives to natural persons and legal entities and to communities to protect nature and to promote respect for all the elements comprising an ecosystem.

Article 72. Nature has the right to be restored. This restoration shall be apart from the obligation of the State and natural persons or legal entities to compensate individuals and communities that depend on affected natural systems. In those cases of severe or permanent environmental impact, including those caused by the exploitation of nonrenewable natural resources, the State shall establish the most effective mechanisms to achieve the restoration and shall adopt adequate measures to eliminate or mitigate harmful environmental consequences.

Article 73. The State shall apply preventive and restrictive measures on activities that might lead to the extinction of species, the destruction of ecosystems and the permanent alteration of natural cycles. The introduction of organisms and organic and inorganic material that might definitively alter the nation's genetic assets is forbidden.

Article 74. Persons, communities, peoples, and nations shall have the right to benefit from the environment and the natural wealth enabling them to enjoy the good way of living. Environmental services shall not be subject to appropriation; their production, delivery, use and development shall be regulated by the State.

In general terms, the Constitution of 2008 states that the full exercise of state supervision over the environment and the responsibility of the citizens in their preservation must be articulated through a decentralized national system of environmental management. In this way, public policies provide the basis for an inter-sectorial and participatory management of shared responsibility. Autonomous governments must deploy efficient mechanisms in their respective management areas and the industrial sectors of private space must assume their role in consonance with social welfare and nature.

Regarding the educational system, Article 27 states: "education will be centered on the human being and will guarantee its holistic development, within the framework of respect for human rights, the sustainable environment and democracy; it will be participatory, obligatory, intercultural, democratic, inclusive and diverse, of quality and warmth; it will promote gender equity, justice, solidarity and peace; it will stimulate critical thinking, art and physical culture, individual and community initiative, and the development of skills and abilities to create and work." Education is a human right and a priority area of Ecuadorian public policy to ensure equality and social inclusion, so is an essential condition to build the Good Living.

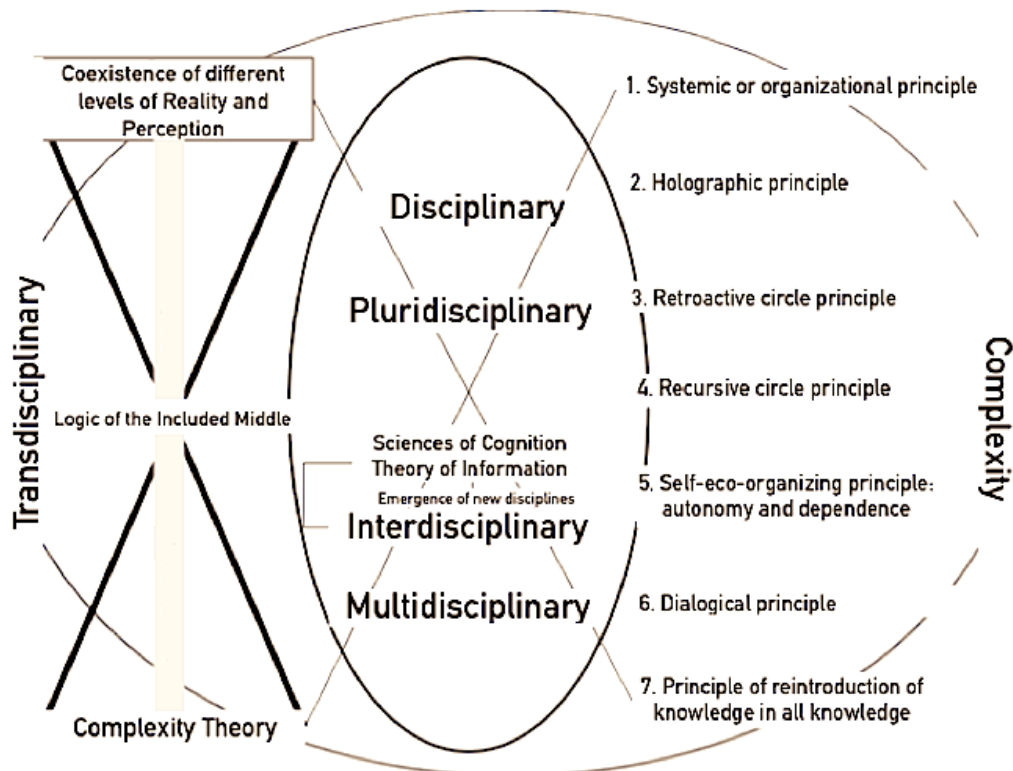
Good Living is a political and philosophical proposal based on the *Sumak Kawsay*, an ancestral Kichwa worldview that understands the human being as an integral and interdependent part of their social and natural environment (Acosta, 2013). For this reason, the government of Rafael Correa prepared the National Development Plan (2007-2010), the National Plan for Good Living (2009-2013) and the Good Living National Plan (2013-2017), in order to mark the way to consolidate Good Living. Among the objectives and public actions of these plans, the promotion of Good Living in schools and universities constitutes a firm step to strengthen EE in Ecuador. In this sense, the National Plan for Good Living (2013, p. 67) states that "the development of the productive forces focuses on the training of human talent and the generation of knowledge, innovation, new technologies, good practices and new tools for production, with emphasis on bio-knowledge and its application to the production of ecologically sustainable goods and services." Thus, the education system in Ecuador is confirmed as a key to promote research, training, and community outreach, in order to help preserve a harmonious relationship between society and nature element (Collado, 2016a).

3. The transdisciplinary methodology: integrating the good living into academic discussion

EE requires a transdisciplinary epistemological approach to understand the complexity of ecosystems, but also to analyzes the ecological footprint left by human beings in our planet Earth (Wackernagel & Ress, 1996). Consequently, this chapter addresses the socio-ecological problems presented in the SDGs of the United Nations from the transdisciplinary methodology proposed by nuclear physicist Basarab Nicolescu (2008) and the "Complexity Theory" formulated by sociologist Edgar Morin (1999). This epistemological combination is characterized by creating an "ecology of knowledge" that is in, between, and beyond scientific and academic disciplines. It also implies openness to the inner spiritual self-awareness, worldviews of indigenous peoples, and other perceptive, affective, emotional, rhetorical, poetic, epistemic, creative, artistic, cognitive, and philosophical dimensions of our human condition.

The transdisciplinary methodology of Nicolescu (2008) is based on quantum physics and comprises three axioms: multiple levels of reality (ontology), the logic of the Included Middle, and knowledge as complex and emergent (epistemology). Those axioms support our vision of the human condition is provisional and open-ended in the profound mysteries of the Universe. In turn, the Complexity Theory of Morin (1999) formulates seven interrelated and complementary principles based on natural phenomena: 1) Systemic or organizational principle, 2) Holographic principle, 3) Retroactive circle principle, 4) Recursive circle principle, 5) Self-eco-organization principle: autonomy and dependence, 6) Dialogical principle, and 7) principle of reintroduction of knowledge in all knowledge. In sum, the main intention of those principles is to identify fundamental problems that are overlooked or neglected in education, and should be taught in the future.

Figure 1. Epistemological combination of transdisciplinary methodology with Complexity Theory.



As it can be appreciated in Figure 1, the theoretical-methodological combination adopted in this research seeks to develop an epistemological tool to train students from primary school to university. This methodological and theoretical combination help us to recognize different ontological and perception levels of our reality. It represents an important epistemological tool to develop a sustainability mindset in EE, where students can learn with activities focused on *feeling-thinking-acting* in harmony with other people, the planet, and the *sacred* (Collado, 2017). They learn different levels of reality compose our own identity: cosmic, planetary, regional, national, and local. That is why the achievement of the SDGs requires that all educators promote a transdisciplinary mindset with projects, exercises, and activities focused on practical applications in the personal and contextual reality of their students (Collado, 2016b). Learning to understand all dimensions of sustainable development requires this complex and transdisciplinary approach in EE to solve problems and develop a sustainability mindset.

4. Results of the national environmental education program in Ecuador

Speaking about EE in Ecuador means emphasized that it is a pioneer country in the constitutional recognition of the rights of nature. But the time has come to take another step. A legal debate must be established to recognize the rights of each river, lake, mountain, etc. India and New Zealand are two

examples of this initiative, recognizing with the rights of legal persons to the Whanganui, Ganga and Yamuna rivers. In the same way that transnational corporations are considered as legal entities, the different natural phenomena also need to be recognized with legal rights. This idea opens a space of “environmental ethics” and “ecological economy,” both fundamental to build the Good Living in the 21st century.

Since July 2017, the Ministry of Education forms the Advisory Committee for the construction and implementation of the National Environmental Education Program “*Land of Everybody*” (Tierra de todos) in which the delegates of the Ministry of Environment, the National University of Education, and the IKIAM Amazon Regional University participate. The Committee is composed of professionals from different disciplines and meets periodically in order to meet different goals related to its five axes of articulation:

1. Conceptual basis of the Environmental Education Program.
2. Transversalization and strengthening of the Current School Curriculum.
3. Implementation of initiatives and good environmental practices in the education sector.
4. Teacher training.
5. Monitoring and evaluation methodologies.

As result, this research aims to develop a critical environmental awareness to advance in those five axes lead by the Advisory Committee. All of them are good examples of eco-pedagogical projects focused in the achievement of the SDGs lead by the United Nations for the year 2030. Those eco-pedagogical experiences have sought to claim a “Pedagogy of the Earth” that reforms the learning methods of formal and institutionalized schooling. While school logic is generally discourse-centered, educational logic emphasizes in the process. In this sense, the educator Moacir Gadotti (2000, p. 47) points out that “it is not an overhaul, but a true structural transformation in the way of thinking, planning, implementing, and managing basic education.”

For this reason, I believe that all educational organizations in Latin America and the world that seek to develop EE experiences should focus on promoting the cosmic miracle of life on our planet. That is, they must develop experiences that make students aware of their social and environmental context, as proposed by the Earth Charter (2000) and is being done in Ecuador, in accordance with the 2008 Constitution and the National Plan of Good Living presented before. In other words, this eco-pedagogical philosophy must transform entire citizenship from the root: making them affectively responsible for current ecological and civilizational crisis.

5. Bio-literacy conclusions

As main conclusion, Environmental Education in Ecuador seeks to bio-literate citizens to face the complex civilizing challenges of the Anthropocene (Steffen, Crutzen & McNeill, 2007), by teaching how to feel-think-act in harmony with the co-evolutionary processes of nature. From my experience as a professor at the National University of Education (UNAE) of Ecuador I have sought to raise awareness and sensitize my students through bio-literacy approaches that embrace the challenge of integrating our human actions into the inter-systemic co-evolution processes of nature. Implementing this bio-literate vision means learning from ecosystems, since they represent true sustainable communities of plants, animals, and microorganisms. According to Fritjot Capra (1998, p. 307): “being ecologically literate, being *eco-literate* means understanding the organizational principles of ecological communities (ecosystems) and using those principles to create sustainable human communities.” This bio-literacy vision should be implemented in the educational institutions, but also in the field of economics, politics, and business. This is the very meaning to face the challenges and to transform Ecuadorian reality.

Before concluding, I want to complement the four pillars of education proposed in the famous report “Education holds a treasure” of UNESCO, chaired by Jacques Delors (1999), to say that Environmental Education must be based on four key ingredients: 1) learn to know the biophysical limits of nature; 2) learn to make a sustainable use of material and energy resources; 3) learn to live together with a fair and equitable distribution of natural assets; and 4) learn to be responsible with the common good of all humanity, our Earth-Homeland (Morin & Kern, 2005). These four pedagogical keys of “ecological literacy” or “bio-literacy” must guarantee the legitimacy and intentionality of the educational processes that lead to environmental citizenship. It will be of little use to update the textbooks if the discourse is not adapted to a socio-ecological reality that is outside the classroom. The procedures, instruments, and pedagogical contents have to be created and recreated day by day, based on the requirements established by the culture of planetary sustainability.

To conclude, it is necessary to reflect on human training in the 21st century. It is urgent to develop critical pedagogies that open new paths to the very interiority of our being: where our feelings,

emotions, and daily experiences build sustainable and regenerative development from the reality of everyday life. That is why I invite the readers to ask themselves: What is the role of Environmental Education to abolish the ecological and civilizing collapse? How can Environmental Education help us to feel, intuit and emotionally vibrate to imagine, invent, and create “other possible worlds”? How can we bio-literate citizens to achieve a sustainable and regenerative development that will lead us to fulfill the SDGs by the year 2030? How can Environmental Education contribute to achieving the objectives of the National Plan for Good Living in Ecuador?

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