

Ecopedagogy: A Movement between Critical Dialogue and Complexity: Proposal for a Categories System

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Abstract

This qualitative research has been undertaken with the purpose of developing an integrated system of categories based on ecopedagogy. Founded on the critical pedagogy of Paulo Freire, this movement moves towards complex thinking and holism. Its theoretical bases are set on principles of sustainability, biosensibility, ethics of care and global citizenship to offer an alternative project for society and the neoliberal economy. The methodological design of this research is supported by the content analysis technique. The qualitative sample includes the *Ecopedagogy Charter*, the narrations of eight experiences of the Earth Charter International and four from the Centre for Ecoliteracy, and documents that offer a great scope for the categorical system. Among the most important findings is that ecopedagogy's principles comprehend ecoliteracy, solidarity and a culture of sustainability; aspects arising from the ecological paradigm in education.

Keywords: Ecopedagogy, ecoliteracy, ecological paradigm, sustainable education, ecoeducation

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INTRODUCTION

In general, education comprises an important resource to address the complex social and ecological challenges resulting from the globalized world in which we live. The various sectors of society claim, through actions, agreements, reports and international treaties, the will of providing education to the voiceless and redirecting it to the path of sustainability (Agenda 21, 1992; Delors, 1996; Earth Charter, 2000; UNESCO, 1977, 2006, 2013). Within this context, a revision of education is essential for coexistence founded on the ideals of peace, freedom and social justice, and for the development of an ecological consciousness and a planetary citizenship.

While it is true that education can promote deep individual and social transformations for a sustainable culture, the experiences we are offering in most of our educational centres ignore the fundamental aspects that could contribute to the urgent change of perception and mentality needed. Our schools and educational systems require a transformation of the educational vision, or as proposed by Gadotti (2010, p. 205), ‘the need of an ecopedagogy, namely a pedagogy appropriate to education practices based on sustainability’.

This research is aimed to develop a system of categories based on ecopedagogy through a content analysis.¹ From a qualitative research orientation, we developed a comprehensive system based on theory and selected educational experiences documents. It has resulted in a unique and contextualized system, as has emerged from the experiences of the Earth Charter International (Costa Rica) and the Centre for Ecoliteracy (California, USA)—organizations promoting transformative education or ‘sustainable education’.² With this, we need to approach ecopedagogy from its theoretical foundations and practices.

ECOPEDAGOGY AS AN EARTH PEDAGOGY FOR A PLANETARY CITIZENSHIP

Ecopedagogy is a movement that represents the fusion between Paulo Freire’s critical pedagogy (2005) and the foundations of complex thinking (Morin, 1998), to confront the neoliberal globalization with an alternate global political project (Gadotti, 2000; Kahn, 2010; Leff, 2000). This merger has generated a transformation of critical pedagogy that, in some cases, remains a strong critical-praxis reference and in others, has evolved into holism. The general theoretical bases of this view are rooted in the development of an ecological and solidary consciousness for the construction of a sustainable culture. This movement has underlying concepts such as organicity, interconnectivity, biosensibility, ethic of compassion and care and global citizenship.

Ecopedagogy is not just another pedagogy among many other pedagogies. It not only has meaning as an alternative global project concerned with nature preservation (Natural Ecology) and the impact made by human societies on the natural environment (Social Ecology), but also as a new model for sustainable civilization from the ecological point of view (Integral Ecology), which implies making changes on economic, social and cultural structures. Therefore, it is connected to a *utopian project*—one to change current human, social, and environmental relationships. (Antunes & Gadotti, 2006, p. 136)

Therefore, because it is oriented to promote the transformational processes, practitioners and theorists of this movement perceive ecopedagogy from an ongoing critical dialogue and from the various projects that respond to the particular needs of their social, political and temporal contexts (Kahn, 2010). Some of these projects in the educational arena recognize this pedagogy as appropriate for the promotion of a sustainable culture.

Ecopedagogy was initially developed in the Latin American context during the drafting of the *Earth Charter*³ and in preparation for the Earth Summit in Brazil, 1992. In this period, a permanent and open dialogue on the pedagogy needed for sustainability had arisen. One of the great contributions for its development was the research conducted by Francisco Gutiérrez and the Latin American Institute of Communications Pedagogy (Instituto Latinoamericano de Pedagogía de la Comunicación) in Costa Rica, 1994; 'That study already speaks of a holistic vision, of the dynamic balance of human being and the category of sustainability, which are essential presuppositions of ecopedagogy' (Gadotti, 2010, p. 205). Later, Gutiérrez with Cruz Prado (1997) coined the term ecopedagogy in their book *Ecopedagogy and Planetary Civilization* and offered a theoretical framework.

This movement was consolidated in 1999 during the First International Earth Charter Conference from the Standpoint of Education, held in Sao Paulo, organized by the Paulo Freire Institute, and supported by the Earth Council and the UNESCO. As a result and by consensus, a theoretical pedagogy document was drafted: *The Ecopedagogy Charter: In defense of an Earth Pedagogy*. This meeting was followed by the First International Forum on Ecopedagogy, held at the Faculty of Psychology and Educational Sciences of the University of Porto, Portugal in 2000 (Fernández & Conde, 2010; Gadotti, 2002). Since then, the Paulo Freire Institute supports the movement of the Earth Charter Initiative and internationally promotes the ecopedagogy's principles.

The founding theorists of the pedagogy of the earth, as it is also known, propose the perception of life as a process of search for meaning, 'a process of self-construction' (Gutiérrez, 2010, p. 225) that inquires into the meaning of things out of everyday life. It is a pedagogy that promotes the rational, the intuitive and the imaginative dimensions of the human being to develop the perception and construction-deconstruction of the world; 'Learning is much more than understanding and conceptualizing: it is desiring, sharing, making sense, interpreting, expressing and living' (Gutiérrez & Prado, 1997, p. 68). It shows itself as a new solidary pedagogy that empowers the citizens to build a culture of sustainability, a culture that values fraternal coexistence between humans and other species that make up the community of life on the planet.

Ecopedagogy is focused on education throughout life and the movement occurs mostly outside the context of formal education, but there are successful practices of the integration of 'a sustainable vision of education' (Gadotti, 2002, p. 160), a 'sustainable education' (Sterling, 2011,⁴ p. 21) or an 'ecoeducation' (Clark, 1997, p. 73) in schools. These experiences are oriented from the holistic views aimed at the transformation of the individual and society. The curricula are reoriented to promote the holistic development of the learner, or as established by Fernández (2011), they offer an emphasis that 'supposes communication, commitment, sharing,

becoming excited, betting on intuitive and communicative and affective rationality, not merely instrumental' (p. 209). Thus, this education goes beyond the mere accumulation of knowledge that is anchored in life and recognizes all the complexity that defines the human being, its multiplicity of dimensions and relations; '...recognizing that education is a complex political and historical social practice' (López-Medero, 2008, p. 117).

Initiatives resulting from ecopedagogy correspond to the ecological paradigm in education. According to Sterling (2011), this paradigm '...builds from humanistic educational approaches in the past, but also takes full account of new developments relating to complexity theory, systems theory, learning theory and the pressing imperative of sustainability' (p. 14). It incorporates some aspects and principles of global education and the critical theory. The model of global education influenced by philosophers and scientists of frontier sciences, in particular from quantum physics—such as, Bohm and Capra—takes a systemic view of connection and interdependence of all phenomena and world events, including those that are social (Gutiérrez, 1995). For its part, the critical theory of Habermas believes in the transformation and transcendence of reality and the human condition. The classical Frankfurt School extensively worked on the world of objective appearances and their implications in social relations that concealed the domination, emphasizing critical thinking as the constituting element for emancipation and social change (Martínez-Rodríguez, 2013).

The ecological paradigm in education implies a transformation of the mechanistic world view that most societies share, especially Western ones. This paradigm suggests a view that departs from connectivity and a sense of community to conceptualize the school and its functions. That is why the metaphor of the school as a factory with the usual quality control must be replaced with the vision provided by a learning community that emphasizes the characteristics of living systems—they emerge and evolve over time (Capra, 2002; Gallegos, 2001; Sterling, 2009, 2011). This shifts the focus on to a new meta-disciplinary, systemic, interactive and evolutionary view and develops a critical self-awareness of the culture in which the individual and society participate (Gutiérrez & Pozo, 2006).

Integrating ecopedagogy's principles in schools involves the structural changes and transformations in all aspects of the curriculum—educational vision, content, methodologies, school organization and culture. In this sense, Fernández (2011) states:

To prioritize the organizational-institutional dimension of the school as the basic unit of change involves generating processes and forms of collegial work aimed at self-revising what is done, rethinking what could be changed and agreeing on action plans, which requires the cooperation of all or the majority of the members to analyze thoughtfully and as a group where one is, why and how one has gotten there, value achievements and needs, ...all of which can imply significant changes in activities, techniques and teaching methodologies. (p. 214)

Definitely, this integration fosters a culture based on reflection, dialogue and collective action, interactions that generate transformations. This implies the opening of the school system to the community in an effort to encourage a contextualized educational experience and a connection with the community of life, all necessary in the transformative learning process.

METHOD

This study aims to generate an integral system of categories based on ecopedagogy.

Sample

The units of analysis selected for our purpose were the *Ecopedagogy Charter*⁵ and 12 stories of educational experiences—four from the Centre for Ecoliteracy and eight from the Earth Charter International. The selection criterion of the units was based on whether the experience evidenced the integration of one of the educational objectives established in the official documents of the organization to which it is affiliated. These units were narrated differently; those belonging to the Centre for Ecoliteracy⁶ were drawn from the publications produced by investigators of this organization, while those pertaining to the Earth Charter International⁷ are narratives written by the participants of these experiences and edited and published in different publications. In general, the units are very different in contexts, approaches and scope; nevertheless, all were conceptualized and developed to promote the sustainability through education.

Data Collection Technique

This research was based on content analysis as a technique for collecting information. This type of analysis seeks for the meaning of words within the context of the paragraph where they occur and the proposed categories and issues are explored (Bardín, 1986). These categories are constructs that are derived or inferred from the studied phenomenon (Gall, Gall & Borg, 2007). ‘The qualitative content analysis will not only circumscribe to the manifest content of the material analyzed but should explore in depth its latent content and in the social context in which the message is developed’ (Abela, 1958, p. 22).

We conducted a deductive–inductive content analysis based on the specialized literature and the repeated reading of the *Ecopedagogy Charter* and 12 documents of experiences within the context of formal education. As a part of this process, we made an in-depth reading of the contents to establish the patterns, trends, convergences and contradictions. Subsequently, to produce the final encoding, we conducted a cross- and comparative reading of the findings so that we could make a comprehensive synthesis and establish the categories and sub-categories.

In this research, the findings were triangulated through different sources and through the consensus of researchers.

Findings, Analysis and Discussion

The integrated system that emerged from our study is comprised of four macro-categories.⁸ These categories include the onto-epistemological aspects and the pedagogical presuppositions of ecopedagogy for the school context. These categories include: (i) purposes of ecopedagogy, (ii) educational vision, (iii) prioritized

methodological approaches and (iv) practice modalities. We present the analysis of the most significant findings of our research below.

1. *Purposes of ecopedagogy*

Overall, the findings make evident that among ecopedagogy purposes there is a transformation of cultural perception—see Table 1. This shift in perception comprehends an ecological and solidary consciousness towards sustainable actions. Under these premises, the construction of our world is based on a complex living system view where every component is interconnected in a web. A sense of unity, interconnection and belonging to the community of life is stressed on.

Of all the units analyzed, the *Ecopedagogy Charter* offered greater breadth and understanding to establish the categories for this macro-category. This is a theoretical document and it overflows the perspectives and characteristics that emerged from the other documents.

The units from the Centre for Ecoliteracy were instrumental, especially in the conceptualization of *ecological consciousness* and *sustainable culture* categories. From these content analyses emerged the concept of sustainable design that we integrated into the definition of sustainable culture.

Table 1 Purposes of Ecopedagogy

Categories/Sub-categories	Evidence
Ecological Consciousness	
Organicity The environment is perceived as a unit consisting of multiple interdependent living systems in constant process of adaptation, transformation and evolution.	'Our Mother Earth is a living organism in evolution' EC-1. ⁹ 'The restorations and long-term results connect with complexities at many levels and teach that we can create the conditions for the Earth to heal herself' CFE-3. ¹⁰
Interconnectivity The environment is perceived as a complex interconnected network in its multiple dimensions (ecological, social, economic and cultural, among others) and levels (local and global, among others).	'Watersheds provide one of the clearest examples of the interconnectedness between human activities and ecosystems' CFE-3. 'To be sustainable, development must be economic feasible, ecological appropriate, social just, inclusive, cultural equitable, respectful and without discrimination' EC-2.
Solidary Consciousness	
Ethic of compassion and care Ethics based on biosensibility, empathy, a deep respect and care for the present and future community of life of the planet.	'Demonstrates how educators can help young students cultivate empathy for other forms of life...and transform that empathy into action' CFE-3. 'As a result, students increased engagement and had a stronger sense of caring for others and for issues in the real world' ECI-1. ¹¹

(Table 1 continued)

(Table 1 continued)

Categories/Sub-categories	Evidence
<p>Planetary citizenship Perception that the planet is the homeland, commitment with the rights and duties with life at a local and global level. Life, social and economic justice, democracy and a culture of peace are promoted.</p>	<p>'...we would like to emphasize the importance of the notion of a "unity of diversity" in our efforts to become planetary citizens' ECI-2.</p> <p>'Having as the purpose the creation of citizens with a local and a planetary conscience' EC-6.</p> <p>'...It is presented as a new rights pedagogy, which combines human rights—economic, cultural, political and environmental—and planetary rights...' EC-10.</p> <p>'...showing the interconnection of protecting our local environment and the global environmental situation' ECI-1.</p>
<p>Sustainable culture Culture that promotes life, integrates new designs that are conducive to ecological integrity and life sustainability.</p>	<p>'...it aims at building a sustainable culture, that is, a bioculture, a culture of life' EC-9.</p> <p>'It is a lifestyle choice for a healthy and balanced relationship with the context, with self, with others, with the nearest environment and the other environments' EC-4.</p> <p>'These concepts are the starting point for designing sustainable communities...' CFE-1.</p>

Source: Table designed by authors.

We understand that these approaches identified in our analysis are the result of the ecological literacy¹² inclusion that this organization imparts to the educational process held in schools. The curriculum integration is based on the ecological concepts from a systemic complex perception, specifically the theory of living systems (Capra, 2005).

The analysis of the *Ecopedagogy Charter* was instrumental for the creation of the category of *solidary consciousness*, especially for the sub-category of *planetary citizenship*. This document calls attention to the importance of developing the perception that the planet is our homeland and that we need to commit to our global citizenship duties relating to a sustainable life. Similarly, the educational experiences disseminated through the publication of the Earth Charter International were very important for the development of this category. All units analyzed allude to the integration of the principles and values of the *Earth Charter* into their practices and educational designs, particularly the inclusion of the ethic of compassion and care. The experiences of all schools from the sample showed processes of curriculum reconceptualization and work, particularly within the category of *planetary citizenship*.

2. *Educational vision*

The categories grouped within *Educational Vision* included in Table 2, emerged mainly from the *Ecopedagogy Charter* that, as already stated, is a much broader and complex theoretical document. It gathers the vision

Table 2 Educational Vision

Categories/Sub-categories	Evidences
Holistic	
<p>Inquiry stand towards life It is based on the idea that every person finds their identity and the meaning and purpose of life through the links established out of everyday life. This process of inquiry is aimed at establishing a balanced position between internal and external knowledge.</p>	<p>‘To walk with a sense means to make sense of what we do, share senses, let the senses permeate the practices of everyday life’ EC-9.</p>
<p>Development of human potential through its multiple dimensions or intelligences The holistic development of the human being is enhanced through cognitive, emotional, physical, social, aesthetic and spiritual dimensions. It recognizes and promotes the development of the multiple intelligences: logical–mathematical, verbal, spatial, musical, bodily, interpersonal, intrapersonal, naturalist, emotional, social and ecological.</p>	<p>‘...It involves the development of new capabilities such as feel, sense, vibrate emotionally, imagine, invent, create and recreate, establish relationships and interconnections, self-organize, inform oneself, communicate, express oneself, locate, process and use the vast information of the global village; look for causes and anticipate consequences, critique, evaluate, organize and make decisions’ EC-7.</p> <p>‘...have found, on integrating emotional, social and ecological intelligence’ CFE-3.</p>
<p>Learning as a transforming process Learning is the integration of the information into the process of personal self-organization and self-construction. It is a lifelong process that goes beyond the classroom and derives from the experiences and the context traveled by the individual.</p>	<p>‘This would give the educators the experience of a transformative process in their way of thinking and acting more sustainable lifestyles’ ECI-8.</p> <p>‘...the objective is that the Charter will become a growth instrument for human beings and serve as a stimulus to personal transformation...’ ECI-3.</p>
<p>Transdisciplinary Integration of a large number of perspectives (art, science, philosophy, humanities, spiritual traditions) for the study of human complexity as well as multidimensionality and the levels of reality.</p>	<p>‘Such capabilities should lead people to act methodically, with a totalizing and transdisciplinary approach’ EC-7.</p>
<p>The construction of shared meanings through dialogue and the collective experience Collective and democratic communication experiences are promoted for the construction of shared meanings and concerted action. Learning communities that reflect on their processes to act consciously are established.</p>	<p>‘Experienced out of everyday life by people in groups and in living spaces’ EC-5.</p> <p>‘Creating a learning community that emphasized active learning and shared decision making...’ CFE-3.</p>

Source: Table designed by authors.

shared by theoreticians of this movement and clearly expresses the educational goals. The units of analysis from the Centre for Ecoliteracy and the Earth Charter International, in some cases, recap the selection of the categories and their definitions. It is important to point out that the Centre for Ecoliteracy recognizes the theory of multiple intelligences with special emphasis on the emotional, social and ecological dimensions. These valuable contributions from this Centre to the system of categories that we have presented may be due to the continuous experience they have had in sustainable education. The holistic educational model and competencies developed by the organization are specifically for the school educational context. It stems from a holistic view of education and proposes competencies for sustainable living. The Earth Charter International promotes education for sustainability between different sectors of society, among which is school education, but it does not have a holistic educational model *per sé* for the formal context.

3. *Prioritized methodological approaches*

While the *Ecopedagogy Charter* offers guidance for developing and defining the categories grouped under the macro-category *prioritized methodological approaches*, the units from the Earth Charter International were instrumental in providing the evidence, as it can be seen in Table 3. In these units, we found direct references to the vast majority of the sub-categories, especially those related to communicative and participatory processes and to the development of affective, aesthetic and ethical dimensions of the human being. These approaches may be related to popular Latin American pedagogical practices which are part of the foundations of ecopedagogy. Meanwhile, the Centre for Ecoliteracy provides rich evidence for experiential methodology. We believe that the approach of place-based learning and projects offered by their educational model may be determining the prevalence of these methodological approaches.

4. *Practice modalities*

The categories organized under *practice modalities* emerged from the content analysis that we made of the 12 educational experiences—see Table 4. The findings provided a rich variety of practices from which we have selected those that respond to the methodological approaches that comprise ecopedagogy. In this sense, the three units of analysis of the Earth Charter International offering teacher in-service training experiences were helpful. From these three samples emerged the sub-categories of *socio-affective dynamics, artistic expressions, mindful meditation and creative visualization*. We understand that the experiences were aimed at promoting personal transformation through self-knowledge and collaborative work. Findings revealed that those trainings enhanced the holistic development of participants through cognitive, emotional, social, aesthetic and spiritual dimensions that could foster an instrumental and intuitive rationality.

The samples gather strong evidence for the categories *collective projects* and *connecting experiences with place*. The *collective projects* incorporate

Table 3 Prioritized Methodological Approaches

Categories	Evidences
<p>Emergent Dynamic, spontaneous, intuitive and fundamentally communicative-dialogic process that encourages learning from everyday life, the context, the interests and needs of people.</p>	<p>‘Constantly ask students for ideas and through a joint evaluation on what they are learning and what is important, students constantly shape the curriculum’ ECI-5.</p> <p>‘You really need to know the curriculum much better than a regular teacher does, in order to be prepared to make a lesson out of whatever comes up’ CFE-4.</p>
<p>Interdisciplinary Process that promotes connections between different areas for the construction of knowledge.</p>	<p>‘Sustainability must be a reorienting interdisciplinary principle of education, of school planning, of the teaching systems and the political-pedagogical school projects’ EC-3.</p>
<p>Critical-praxis Critical and conscious process of inquiry and action that promotes a process of democratic participation.</p>	<p>‘...students were able to recognize environmental challenges surrounding them on a daily basis and brainstorm solutions and alternative actions to these ongoing issues by utilizing analytical skills...’ ECI-1.</p>
<p>Experiential Opportunities for empirical knowledge in the natural or social environment through a participatory involvement in everyday experiences.</p>	<p>‘...participants visited an integral farm... Participants were able to experience the process of generating compost and biogas and see how they are used for farm process’ ECI-8.</p> <p>‘Had worked in experiential education for more than two decades’ CFE-4.</p>
<p>Ethical Approach that pursues rational analysis and the experiential dimension of the values for their clarification as related to decision-making and the consequent actions of the individual and the collective.</p>	<p>‘...students then spent the school year taking conscious actions based on their own values and principles’ ECI-5.</p> <p>‘...an articulation of students environmental ethics’ CFE-2.</p> <p>‘The questionnaire seeks to raise the level of consciousness among participants about their own values’ ECI-3.</p>
<p>Affective Process that promotes sensibility, affection and connection with our environment influencing emotions or feelings.</p>	<p>‘share...feelings and affections’ ECI-3.</p> <p>‘Appealing to the emotions and fostering critical reflection on participant’s values were important’ ECI-8.</p> <p>‘To educate for the planetary citizenship involves the development of new capabilities, such as...imagine...invent, create and recreate...express oneself...’ EC-7.</p>

Source: Table designed by authors.

Table 4 Practices

Categories	Evidences
<p>Socio-affective dynamics Lived experiences from the affections that are shared collectively, that promote critical analysis of our individual collective values and the personal and social practices.</p>	<p>'She led them in a discussion designed to have them reflect on their own life choices' CFE-4. '...in a dynamic, cooperative, recreational and participative manner, with everyone sharing their personal experiences and delving into real-life cases' ECI-3.</p>
<p>Connecting experiences with place Experiences conducted through direct contact with the social, ecological and cultural context in which the learning process takes place.</p>	<p>'I think people want to be involved in life-giving things: the environment and each other' CFE-3. '...education is only possible through engaging and learning collectively with the context of the reality' ECI-2.</p>
<p>Artistic expressions Expression of our inner world through the arts (literary, musical, visual and performing) to inspire the creative potential and self-knowledge.</p>	<p>'Artistic development with multiple languages...' ECI-2. '...while artistic expression is shared through music, acting, storytelling, drama, and role playing' ECI-3.</p>
<p>Mindful meditation and creative visualization Method through which we lower ourselves into a deep state of concentration consciously looking for a sensation of peace and tranquility. This technique clears our minds and allows us to think with more clarity and more creatively. Through the use of mental images in states of deep relaxation, our internal conscience is activated and a process of self-knowledge emerges.</p>	<p>'Also, the facilitator might use exercises for breathing, meditation, creative visualization, neurolinguistics programme, inner silence...' ECI-3.</p>
<p>Collective projects Projects that start with the interdisciplinary research conducted by the learning community and that are aimed at solving real problems with sustainable designs.</p>	<p>'Projects were done in groups to promote team building and dialogue skills' ECI-8. '...they (teachers) guide the students in carrying out the projects—usually, in the presence of parents and other community members' CFE-3. 'So they created projects focused on positive solutions...' ECI-5.</p>
<p>Integration of information and communication technologies Strategy that promotes the construction of knowledge through discussion, reflection and decision-making using the information resources as mediators.</p>	<p>'Technology was also utilized to create a website to facilitate communication, provide resources... and log educational experiences' ECI-4.</p>

(Table 4 continued)

(Table 4 continued)

Categories	Evidences
<p>Curricular reconceptualization Development and integration of transversal themes, study plans, materials and courses. Transformation of the school curriculum from a critical and global perspective.</p>	<p>'Schooling for sustainability...is a collaboration of the whole school community to rethink the curriculum and create a healthy campus environment' CFE-1.</p> <p>'The first step in the process was putting teachers into planning teams to map out how the Earth Charter could be used as an underpinning philosophy for current and future units of work' ECI-6.</p>
<p>Professional development Professional formation offered through courses, seminars and workshops, exchange of experiences and development of the curriculum, study plans and materials.</p>	<p>'This (summer readings) allowed teachers...finding a personal connection to sustainability...is essential to inspiring genuine motivation for integrating it to teaching and learning' CFE-1.</p> <p>'...these consultations have turned into projects to develop continual training courses for teachers, and pedagogical coordination for formal and non-formal educational institutions' ECI-2.</p>
<p>Networks Collaborative partnerships are established with local and international institutions and organizations to achieve learning by the school community.</p>	<p>'By incorporating...and partnerships with the community' ECI-1.</p> <p>'To encourage the creation of networks...'</p> <p>ECI-3.</p>

Source: Table designed by authors.

alternatives of sustainable design and pursue the importance of the *experiential* and *critical/praxis* approaches. These projects vary in scope, some projects have global significance and others have local-community impact. The *connecting experiences with place* could help the participants feel connected to nature and to the community of life. Both the learning strategies are intended to provide collective and contextualized practices, which, in theory, allow relevant and lifelong learning experiences. Moreover, they provide an opportunity for the development of emotional, social and ecological intelligences.

In all analyzed units corresponding to school experiences, the processes for the reconceptualization of the curriculum are presented. In the experiences of the Earth Charter International, this reorientation takes place by integrating the principles and values of the *Earth Charter* to the curriculum, materials and activities. This reorientation was linked to the hope of promoting a personal and social transformation from a planetary citizenship

consciousness. In terms of the experiences of the Centre for Ecoliteracy, the reorientation is intended towards integrating the principles and ecological concepts (which are based on the theory of living systems) to the study plans, materials and activities. It also examined and questioned the assumptions of the school–community culture.

The findings of our analysis reveal the importance of providing teachers with *professional development* to support the educational transformation and facilitate meaningful and transformative experiences. In the study units where the curriculum stems from interdisciplinary and critical-praxis approaches, this need was identified by the teachers. These approaches provide the curriculum with an emerging dimension that requires a lot of flexibility and creativity. This emerging element also raises the need for a deep knowledge of the place where the educational process is conducted. The information we collected reveals that the professional development is delivered through courses, workshops, conferences, participation in curricular reconceptualization and the creation of study plans, materials and activities as well as through interdisciplinary dialogue.

Finally, the modalities of the *integration of information and communication technologies* and the *networks* emerged in the units as tools that support the learning processes, particularly the exchange of information and experiences. We found evidence that *networking* may be developed virtually, an aspect which we believe offers the possibility of gaining a global consciousness.

CONCLUSION

Ecopedagogy is a movement that transits between critical pedagogy and complex thinking. Its aims correspond to the three dimensions of the ecological paradigm in education. This pedagogy fosters critical and systemic complex understanding of the world while it is oriented towards fraternity and solidarity with the community of life. It promotes an education that nurtures the transformation of citizens for the critical construction of a sustainable culture.

The ecopedagogy movement promotes a holistic vision of education for the school context. The nature of this philosophical view is the development of compassionate, caring and intelligent human beings who can build and live in sustainable societies (Gallegos, 2001, 2004, 2005). It has the transformation of consciousness as its goal. From this point of view, people find their identity, meaning and sense of their lives through the links that they establish out of their everyday life experiences. Learning processes are based on dialogic communication. This communicative approach is aimed at an emergent process developed in a participative, intuitive and interconnected state between the participants to generate meaningful and transformative experiences (Crowell & Reid, 2013; Freire, 2005). This approach promotes the meaning of contextual life and the development of human potential. The practices focus on the learner and on the collective construction of knowledge.

The methodological approaches of this pedagogy emphasize the importance of the holistic development of the human being. It prioritizes the affective, aesthetic, creative and ethical dimensions that are undervalued by traditional education. This holistic development of the personal dimensions could well encourage the development of the emotional, social and ecological intelligences that are necessary for the construction of a new sustainable society. They are ‘...essential dimensions of our universal human intelligence that simply expand outward in their focus: from self, to others, to all living systems’ (Goleman, Bennet & Barlow, 2012, p. 7).

From our analysis, we infer that the integration of ecopedagogy’s principles to the school context presupposes an openness and willingness of the educational community to change. This transformation includes all the processes gathered in the formal scenario. The school community requires structural changes which includes curriculum reconceptualization and in-service professional development. An important factor is that all community sectors are needed to be involved in the decision-making process.

Our qualitative research has fulfilled the purpose of developing an integrated system of categories based on ecopedagogy, using a deductive–inductive content analysis. The collection data technique provided us with a rich and valuable evidence. The *Ecopedagogy Charter* was fundamental in conceptualizing and grouping the categories into *purposes*, *educational vision* and *methods*. The analyses of the educational experiences of the Earth Charter International as well as those of the Centre for Ecoliteracy were important to validate the categories and for the development of the final section of the system, *practice modalities*. These two organizations opened the space for an integrated categorical system providing extensiveness and complexity for the understanding of this pedagogy movement. On the one hand, an ethical and global focus was provided, while on the other hand, an ecological and community emphasis complemented it.

As a recommendation, we suggest the study of ecopedagogy in other cultural contexts and educational models. Our categories could well serve as a reference or starting point for describing the educational programmes with different approaches. The diversity of practices that are proposed in the light of ecopedagogy imposes a great complexity to its analysis.

Notes

1. This research is part of a broader investigation towards the comprehension of ecopedagogy practices in the eco-schools programme in Puerto Rico.
2. Sustainable education is described as that education that develops and incorporates in itself the theory and practice of sustainability with a critical conscience (Gadotti, 2002; Sterling, 2010).
3. The *Earth Charter*, www.cartadelatierra.org, is an ethical statement committed to ecological integrity, universal human rights, economic equality, social justice and a peaceful culture (Earth Charter, 2000). This was agreed upon and drafted by the civilian population to guide its transition towards a sustainable future. Among the most important aspects presented in this document are its explicit ethical dimension of responsibility for the common good, the perception of interdependence and connection based on an ecological consciousness and systemic complex thinking and the call to commitment with critical and transformative action (Murga-Menoyo, 2009).

4. The first edition of this text by Sterling dates from 2001; for research purposes, we have used the fifth edition.
5. The *Ecopedagogy Charter* is a document approved by the participants of the First International Earth Charter Conference from the Standpoint of Education and later published by Gadotti (2002, pp. 161–163).
6. The educational experiences selected from the Centre for Ecoliteracy that are part of the sample are as follows: The publication *Smart by Nature* (Stone & Center for Ecoliteracy, 2009) that included three units: (i) Greening A K-12 Curriculum (Head-Royce School), (ii) learning in Community for Community (School of Environmental Studies) and (iii) growing vegetables at below 10 (Troy Howard Middle School). From the publication *Eco-Literate: How Educators are Cultivating Emotional, Social, and Ecological Intelligence* (Goleman, Bennett & Barlow, 2012), the following experience was included: From restoration to resilience: Students and teachers restoring a watershed, Northern California (Brookside School and the STRAW Project).
7. The educational experiences selected from the Earth Charter International that are part of the sample are as follows: From the publication *Good Practices in Education for Sustainable Development: Using the Earth Charter* (Vilela & Corrigan, 2007), five units were included: (i) Group of Eco-pedagogues, Brazil- Experiential Workshop for Educators on the Earth Charter (Nunes, Boleiz, Blauth, Saxon & Christov, 2007), (ii) Valores Foundation, Spain—Training the trainers: In values education (Pinar Merino, 2007), (iii) Voyager Montessori Elementary School, United States—Butterflies and being kind: An elementary school embraces the Earth Charter (Corrigan, 2007), (iv) Wondai State School P-10, Australia—Learning to see the big picture with the Earth Charter! (Gibson, 2007), (v) University of Auckland, New Zealand—The Earth Charter in the classroom: Transforming the role of law (Taylor & Bosselmann, 2007). From the *Journal of Education for Sustainable Development* (2010), 4(2) two units were included: (i) Going global in Arlington, Virginia (Ashlawn Elementary School) (Miranda, 2010) and (ii) CREADS, A Teacher Training Course on ESD in Costa Rica (Jiménez-Elizondo, 2010). The eighth experience was taken from the publication *The Heart of the Matter: Infusing Sustainability Values in Education. Experiences of ESD with the Earth Charter: Preserving our Community of life* (Jiménez & Williamson, 2014): Integrating the Earth Charter's philosophy into the Eco-School Programme of Puerto Rico (Julián Blanco School) (Rodríguez-Harrison, 2014).
8. The system of categories we elaborated adapts the structure presented by Lucie Sauvé (2005) which has the following parameters to define an educational trend: the prevailing conception of the environment; the central purpose of environmental education; the privileged approaches; examples of strategies or pedagogical models that illustrate the trend.
9. The acronym EC refers to the *Ecopedagogy Charter* and the number that follows corresponds to the principle in reference.
10. The acronym CFE refers to Centre for Ecoliteracy and the number that follows corresponds to the number established for the unit of analysis.
11. The acronym ECI refers to the Earth Charter International and the number that follows corresponds to the number established for the unit of analysis.
12. According to Capra (1998), 'Being ecologically literate, or "ecoliterate", means in our view, understanding the basic principles of organization of ecological communities (i.e., ecosystems) and using those principles for creating sustainable human communities, in particular, we believe that the principles of ecology should be the guiding principles for creating sustainable learning communities. In other words, ecoliteracy offers an ecological framework for educational reform' (p. 3).

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