Chapter 4
Transversality, Diversity, Criticality, and Activism: Enhancing E(S)E in Teacher Education

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We know it is not easy to transform school and academic culture so as to ground education in the evolving dynamics of the socio-ecological realities of our world, and to experience education as a process of life itself. The current politics of formal education—from curriculum design, to teacher education, and classroom settings—maintain a huge gap between schooling and different contexts where rooted, strategic, and meaningful learning can occur. Too often, school stands offshore, as an island where pupils wait for "real life" to happen, learning things that "could be useful later".

Important questions emerge here: How can schools invite and accompany children and youths to take part in the current ecosocial transformation movement that is shaping their world? How can they be considered full actors here and now in their community, and not only as future citizens or carriers of moral precepts? How can we value learners' creative forces and respond to their quest for meaning and desire for action? To use Henry Giroux's (2005) expression, how might we enhance the role of teachers as "cultural workers"? How can students contribute to defining and enacting the major cultural shift our society needs? These questions challenge teacher education programmes, as they are often the first locus of interpretation and appropriation of curricula, and of critical and constructive reflexion about education. In short, how can we encourage teachers "to assume a social and political leadership role" (Association of Canadian Deans of Education 2016, p. 3)?

Let us examine here what could be the contribution of the rich theoretical and pedagogical heritage of environmental education, as an ontological and political process, to respond to such questions. For this exercise, I will dwell on the educational culture of our interdisciplinary research centre (Centr'ERE[1]) which is

[1] Centr'ERE in Université du Québec à Montréal: https://centrere.uqam.ca/

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D. D. Karrow, M. DiGiuseppe (eds.), *Environmental and Sustainability Education in Teacher Education*, International Explorations in Outdoor and Environmental Education, https://doi.org/10.1007/978-3-030-25016-4_4

grounded in an important partnership with diverse organisations of our educational society. Adopting a vision of research as a reflexive system, where investigation, teacher education, professional development, educational practice, and social action are closely related in retroactive processes, Centr'ERE's members are involved in projects and programmes related to environmental education, including preservice teacher education. We are deeply concerned about the persistent lack of institutional support for environmental education and have worked collectively towards the development of a policy strategy to promote environmental and ecocitizenship education in Québec.[2]

4.1 Environmental Education: A Transversal Dimension of a Holistic Education

Environmental education offers important tools in response to the quest for relevant learning in these troubled times, where loss of meaning and belonging, ecological problems, and social tensions—along with inequalities—are dramatically increasing. In French, we use the expression *éducation relative à l'environnement*, which Paul Hart (2003) referred to in English as environment-related education. This field encompasses the diverse types of education concerned with our human relation with the environment, more precisely with the web of relationships between persons, societies, and the environment: nature education, conservation education, place-based education, environmental health education, ecojustice education, and education for sustainability, among others. Each one of these fields is concerned with a particular aspect of our relation with the environment, defined as a complex web of socio-ecological realities.

Whereas education and environment are two socially constructed fields of interaction that are culturally, ethically, and politically shaped, environmental education (or environment-related education) can be interpreted through many diverse theoretical frameworks and be enacted in an impressive diversity of pedagogical approaches and strategies (Sauvé 2005, 2017c). Globally, let us consider environmental education as an essential and transversal dimension of the holistic process of education, a dimension more specifically concerned with one of the three interaction spheres at the basis of personal and social development (Fig. 4.1).

The core sphere corresponds to relationships with our self: learning to be, learning to learn and to connect with the world, while constructing the multiple aspects of our identity. This first sphere relates closely to the second one, that of relationships with other humans: developing human alterity through democracy, interculturality, peace, justice, cooperation, and so forth. And the third sphere, deeply interconnected with the two others, is the one of our relationships with

[2] See https://centrere.uqam.ca/wp-content/uploads/sites/12/2017/01/%C3%89l%C3%A9ments-dune-Strat%C3%A9gie-Version-de-travail.pdf

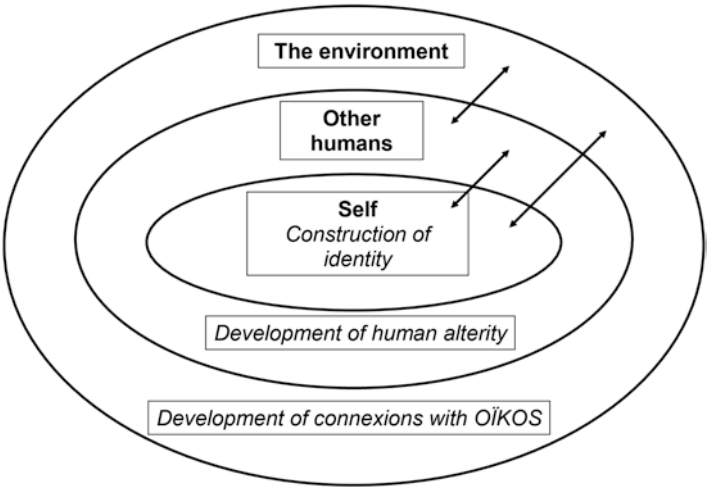

Fig. 4.1 Environmental education: an essential part of the global educational process

oïkos—our common home, the living environment in which our humanity is embedded in a more-than-human world.

This third interaction sphere calls for ecological education. The aim here is to recognise that we are embodied beings and that our lives are situated, contextualised, and intertwined within a whole life web. We need to nurture connections with the natural world, to define our human ecological niche in relation to all the niches composing the local and global ecosystem to which we belong; we need to learn how to fulfil this "function" adequately, in a responsible way. The growing movements of outdoor schooling, of nature classes, and of place-based education all contribute to this educational goal (Louv 2016; Sobel 2006, 2016).

The interaction sphere with *oïkos* also calls upon an economic education: the aim is to learn how to collectively use and share our common home and its resources, with care and solidarity. Conservation education and consumption education are key elements here (Agundez Rodriguez and Jutras 2013). One of the diverse reference frameworks for such education may be the politico-economic international programme of sustainable development, but it can also be the transition and degrowth movements, or ecodevelopment, or more ecocentric frameworks like the Indigenous *vivir bien* community-based economy, or other proposals aiming to interpret and build our economic relation with the environment (Sauvé and Orellana 2014).

In this third sphere, we also find eco-sophic education, as it serves to clarify one's personal and cultural vision of the world (or cosmology), including our most immediate reality, and to build a coherent ethic. Ecosophy—as first defined by Naess (1989)—implies, among other things, rethinking the contextual significance of responsibility, care, justice, equity, solidarity, sustainability, and other values that can be adopted while facing different socio-ecological issues or situations.

Finally, in this sphere of interaction with *oïkos*, ecosophy leads to ecocitizenship (Greenhalgh-Spencer 2014). Our *oïkos*, our common home, is also our City, in the meaning of the ancient Greeks who used the word *polis* for city (*polis* being the root of the word politics). The City is a democratic place (which needs to be inclusive) where free and autonomous humans take decisions together about issues that affect them all. *Polis*, the City, is found in school, in the workplace or in the neighbourhood, in villages and towns, in the country, in international communities. Citizens have to learn to live together in their City. Now, ecocitizenship gives a specific meaning to the City, that of our living home shared between us humans, and also with all other life forms and systems. In the ecological City, our humanity is intertwined with the fundamental web of life itself. The City is not restricted to our human community; it includes the whole community of life (Sauvé 2017b).

4.2 Ecocitizenship: The Political Dimension of Environmental Education

Let us develop the idea of ecocitizenship. Schooling and academic life cannot be dissociated from the realities of our troubled and worrying times. In the context of the current governance, centred on political and economic alliances, and often backed by a complacent or incoherent legislative system, it is up to civil society to assume the difficult and very demanding role of becoming a critical vigil, of fighting *against* or *for* projects, programmes, or policies that affect lives, places, and territories. The ecological argument, which stresses the preservation of the integrity of ecosystems, as well as the concept of common goods (water, soil, health, security, auto-determination, etc.) seems to have very little importance for policy-makers, if only when they are upheld by popular discontent, requests, and claims.

Citizen mobilisation is more necessary than ever for whistleblowing, for raising debates, for contributing to problem solving, for protecting ecosystems and human health, and for reclaiming socio-ecological equity and environmental justice. It is also required in order to contribute to ecosocial innovation and transformation; for example, creative initiatives in the fields of food, health, transportation, energy, housing, and all others. These reactive or pro-active contributions to ecosocial transformation call for the involvement of all the different actors of our educational society, including schools, of course, that need to be well rooted in the community, in a constructive, collaborative dynamic.

So, in relation to the many complementary dimensions of environmental education, including its ontological dimension, aiming at the construction of an ecological identity, and its critical and ethical dimensions that give meaning and purpose to our *being-in-the-world*,[3] the political dimension of environmental education is more necessary than ever. Politics refer here to the democratic process of discussing

[3] As in Heidegger (1962)

together our collective issues, of taking care of our "commons"[4] in school, in the neighbourhood, and in larger communities (Guttiérrez 2002; Heller 1999). Concretely, it means learning to manage information and communication, to question, to discuss, to debate, to deal with the diversity of arguments and uncertainty, to create, to propose solutions; it means learning to learn and to work together.

But if teachers, in relation to their important social role, should be equipped to consider these critical, ethical, and political dimensions of environmental education, what about children? Are they concerned with these aspects of environmental education? This opens up a huge discussion. Is criticality—in which critical thinking is associated with social critics (Burbules and Berk 1999)—an appropriate learning for children? What about activism? Is it not a risky pedagogy with youths? Let us point to some works on these issues.

First, in her inspiring book based on her doctoral thesis, Bronwyn Hayward (2012) says it is not a matter of teaching political science to children, but rather to offer them the possibility of becoming conscious of their place and role in the collective life, and to experiment with active democratic processes. Children need to recognise that ecological problems are closely linked to problems of violence, poverty, injustice, and inequity. Our role as educators is to invite them to talk about their daily living, to clarify their reality, and to experiment and understand how ordinary people (like their parents, their teachers, friends, neighbours, and themselves) can collaborate in collective projects and "act together in free collaboration to achieve extraordinary change" (p. 2), right here, in our living places. "We need to support young citizens as they discover the art, craft and passion of active ecological citizenship" (p. 16). Children and youth must be considered as full actors in our evolving society, without expecting them to carry changes hoped by adults, without imposing them to engage in "crusades" for projects conceived without them.

And also, in the impressive work they edited, Larry Bencze and Steve Alsop (2014) propose an *Activist Science and Technology Education*. The book gathers the contributions of 43 science education specialists to explore the legitimacy of activism in science and technology education, including environmental education, as a contribution to social transformations. The authors point out that inaction and immobility are the opposite of activism. Within this proposition, students are considered as subjects of change, as political subjects, learning through political action, and thus developing an individual and collective pro-active attitude. The teacher plays the role of a cultural animator who must clarify and justify constantly his/her own postures. Here, in relation to critical thinking, the search for meaning remains essential.

Fostering the development of critical and creative competencies, education therefore should focus on *empowerment*—the willingness and capacity to act—which goes well beyond adopting individual behaviours and embraces (e.g. beyond consumer habits) a diversity of relational modes to the environment. It is in the crucible of reflexive action that these competencies can be fully constructed and unfolded, and such experience calls for involvement.

[4] The concept of commons is well discussed by Dardot and Laval (2015) and Lotz-Sisitka (2017).

Involvement, therefore, becomes a keyword in children and youth education. Inviting and accompanying them in diverse ways to be committed in dreaming and constructing their world allows for countering cynicism, and contributes to a pedagogy of hope. We must value inspiring school projects, and recognise the diverse forms of socio-ecological involvement of teachers and their students. This involvement goes far beyond the token gestures associated with consumption and recycling habits.

Of course, ecocivics must be learned, with its hundred "little" daily actions, its responsible behaviours that respond to an elementary social morality; even if these small gestures can be associated with shallow green codes, their adoption is often demanding in the course of everyday life. Ecological management practices must also be adopted in our personal lives and our institutions in a perspective of sustainability, for the preservation of our rarefying resources and the well-being of people. However, beyond ecocivics, ecocitizenship calls for the construction of a deeper value system (or ethics) focused on the challenge of *living here together*. Learning democracy is more essential than ever—a democracy not only centred on human rights but that also considers living beings' rights, and the rights of life systems (Bourg and Whiteside 2010).

Ecocitizenship calls upon youths, and upon us all, to become involved in the collective and concerted care for socio-ecological realities: this implies learning in all domains, including politics, economics, and law (e.g. such as children's rights—their right to access information and to have their voices heard). These questions should be addressed as early as possible, following the development of understanding and of the capability to act, through the teaching of geography, history, natural sciences, or philosophy (including morals and ethics), as well as in the teaching of language skills—as Célestin Freinet (1968) and Paulo Freire (1970/2000) observed, you can't learn to read without learning to read the world. To be sure, the ideal context for integrating these learnings and transferring them would be an environmental education curricular-specific space.

Beyond ecocivics, ecocitizenship invites us indeed to involve ourselves in more structured projects characterised by the depth of their political significance and their contribution to the construction of a societal project, in accordance with a system of values we must clarify, confront, and enact. Hope for the future needs to be anchored in the confidence that all citizens are capable of contributing towards building their world, together, as soon as their age allows them to participate in the City, in the collective life.

4.3 Environmental Education: Rethinking Curriculum and Pedagogy

Exploring the scope of environmental education and its diverse dimensions—ontological, pragmatic, critical, political, and others—we can observe three main complementary perspectives that can and should be adopted while deploying this

essential sphere of a holistic education. And these perspectives correspond to three "good reasons" (or three components of a global argument) for integrating environmental education in curricula. Primarily, there is an environmental or socio-ecological perspective centred on the contribution of environmental education to protect and enhance the quality of the environment, in relation to human populations' quality of living. Here, we find among other educational issues environmental health, risk management, ecological justice, socio-ecological equity, and so many others. Secondly, a psychosocial perspective is centred on the contribution of environmental education in order to fundamentally enhance the quality of being of persons and social groups in relation to their environment. We find here the construction of a vision of the world, of an ecological identity, one that includes a political identity[5] as well as ecocitizenship, and that responds to issues of belonging, meaning, and resilience, among others. Thirdly, a pedagogical perspective focuses on the quality of teaching processes, so as to stimulate learning towards the ecosocial transformation we need in our societies. These processes call for interdisciplinarity, knowledge dialogue and mobilisation, and transversality through disciplines and pedagogical projects. They also call for experiential and co-learning approaches, for critical pedagogy, and sound reflexive activism. Without attention given to this third perspective, the other two cannot be adequately considered. The rich pedagogical heritage of environmental education can help foster teaching and learning practices that enhance the relevance and the efficacy of contemporary education.

In this regard, there exist some curricular windows through which environmental education can be integrated in school. For example, as in many contemporary national curricula, the actual Québec education programme[6] already includes possibilities for transversality, for cross-curricular pedagogy, and for connecting school to real life. The programme is centred on the main explicit goal of accompanying children and youths in the process of constructing their own worldview, of constructing the significance of their being-in-the-world. Such a worldview should be constructed through the diverse subject areas and the development of cross-curricular competencies (methodological, intellectual, personal and social, and communication-related competencies). Also, the curriculum includes the important transversal component of five broad areas of learning,[7] including environmental awareness. Of course, we think it is regrettable to see that environmental education is reduced here to awareness and is mainly associated with the issue of consumption in the problematic perspective of sustainable development (Sauvé 2017a; Sauvé et al. 2007). Still, the programme would allow for the inclusion of more holistic

[5] Following Mitchell Tomashow's (1996) proposal

[6] Elementary programme: http://www.education.gouv.qc.ca/fileadmin/site_web/documents/dpse/formation_jeunes/ecr_elementary.pdf.

Secondary programme: http://www.education.gouv.qc.ca/fileadmin/site_web/documents/dpse/formation_jeunes/ecr_secondary.pdf

[7] Health and well-being; personal and career planning; media literacy; citizenship and community life; environmental awareness; consumers' rights and responsibilities: these areas have strong relations between them that can foster significant integration.

environmental education, as a growing number of teachers have already understood: they learned by themselves to re-read the curriculum and interpret it, opening spaces for pedagogical liberty and creativity.

However, in Québec, as elsewhere, there is a lack of teacher education not only in environmental education but more generally concerning transversality and the possible cross-curricular "niches" that would help develop a contemporary education rooted in real life, an education not only designed *for* the children and youths but also *with* them, as full actors of their community and of their learning journey. Teachers' preservice education programmes include very few elements concerning, for example, project-oriented approaches, field- and place-based pedagogy, or other experiential strategies. Despite the importance of the current socio-ecological issues, very few preservice optional courses or activities are focused on environmental education[8]; its political dimension (ecocitizenship) may easily be forgotten because of its possibly controversial components. Environmental (or socio-ecological) contents have not penetrated mandatory teacher education courses either, such as those focusing on the fundamentals of education, sociology, or philosophy of education, or general and specialised didactics—except through certain windows of opportunity in the fields of science and technology and of moral education. Furthermore, teachers have little or no support in their school context to integrate environmental education contents and activities in their teaching. They rarely have access to in-service professional development activities or programmes in this regard. This situation contributes to the feeling of incompetence they frequently express when facing the integration of an environmental or socio-ecological dimension to their pedagogical practices.

Because of the usual school settings or format, the disciplinary structure of the education programmes, the current culture of evaluation practices, and the lack of appropriate teacher education concerning environmental pedagogy, most school activities integrating an environmental education dimension end up depending on the personal interests and motivation of teachers, and are more easily realised in an after-school context. Fortunately, pioneer school boards now offer some counselling service to accompany such pedagogical initiatives,[9] and, facing the lack of institutional support, teachers unions pursue their programmes to foster and support socio-ecological education in school.[10] But we can easily observe that up to now, environmental education has mostly been developed outside or at the margins of the formal context: a huge expertise has been developed in museums, parks, NGOs, and other non-formal structures that also offer their services to schools. As long as there are resources for such collaborations with different actors of our educational society, these partnerships will remain very important. But, in the current neoliberal context, these types of resources more than ever are becoming scarce.

[8] For example, https://etudier.uqam.ca/cours?sigle=DDD3513

[9] For example, the Montréal school board initiative: http://csdm.ca/csdm/environnement/ecoles-engagees/

[10] For example, the Réseau des Écoles Vertes Brundtland de la Centrale des syndicats du Québec: http://www.evb.lacsq.org/

4.4 Some Guidelines for Teacher Education[11,12]

Considering the major importance of current socio-ecological issues, the urgent need for a real transition process in our society, the important role of school in fostering a deep cultural change in this regard, and in light of the different specific reasons mentioned in the previous section, the development of teachers' competencies in the field of environmental education needs to be strongly supported. Of course, we must hope and work for the enrichment of school curricula and programmes, and the development of relevant didactic tools and pedagogical materials. However, to stimulate these advances and translate them into concrete practices, teachers must receive adequate education about fundamentals and contents, as well as about appropriate approaches and strategies for environmental education.

A specific professional competency would therefore need to be integrated in initial teacher education curricula: teachers should be able to relate pedagogical situations and students' learnings to the socio-ecological realities of life (in the community, neighbourhood, city, and region and on larger scales), so as to enhance the development of an ecological identity, to foster the construction of a critical vision of the actual and upcoming world, and to increase the capabilities of children and youths in regard to ecocitizen action.

Developing this key action competency in environmental education involves the acquisition and integration of the following learnings[13]: knowledge, know-how, attitudes, and values.

Knowledge: The teacher should be able to …

- Acquire and update a general culture concerning the socio-ecological realities of our contemporary world, especially those related to one's own context of educational practice.
- Recognise the diversity of existing visions of the world or cosmologies, of ethical postures, and of cultures that shape our relationship with the environment, in order to develop a critical approach of these frameworks and favour sound and contextually appropriate pedagogical choices.
- Understand the political dimension of our relationship with the environment, in the sense that *political* refers to the act of collectively taking care of our commons (what concerns us all), while engaging in rigorous and democratic debates, and getting involved in our communities, our City.

[11] This section is inspired from a collective work involving different members of our research centre. Hugue Asselin, Tom Berryman, Carole Marcoux, Jean Robitaille, and I mainly have contributed to reflect on teachers' competency in environmental and ecocitizenship education: https://centrere.uqam.ca/wp-content/uploads/sites/12/2017/08/Note-conceptuelle-pour-une-Comp%C3%A9tence-%C3%A0-lenseignement_03-05.pdf

[12] These guidelines afford a convergent view with the guidelines proposed by the ESE-TE group and as first clarified in the *DEEPER* document (Inwood and Jagger 2014).

[13] Of course, the lists presented here are incomplete. The idea is to underline some main avenues that could help design teacher education programmes.

- Characterise the different theoretical and practical currents that have been developed in the field of environmental education, each one translating a specific representation of the environment, of education, and of the relationship between them.
- Identify, in relation to these currents, the many specific or appropriate approaches and strategies for environmental education, so as to foster pedagogical diversity and contextual relevance of didactic choices.

Know-how: The teacher should be able to …

- Identify and take advantage of the diverse possibilities for the integration of environmental education and ecocitizenship-related content and activities as offered by the existing disciplinary programmes.
- Break down the silos of school subjects so as to develop learning projects that have significance for children and youths.
- Experiment and use inter- and trans-disciplinary pedagogical approaches and strategies allowing for the deployment of the transversal dimension of the education programme.
- Promote the frequent and significant experience of nature by children and youths.
- Conceive pedagogical situations that allow for anchoring students' learnings in the realities of their own milieu (considering different complexity levels in accordance with their age); experiment project pedagogy, field- and place-based pedagogy, outdoor education, community work, and other approaches and strategies related to experiential and collaborative learning, to criticality and creativity, and to reflexive action.
- Promote dialogue and knowledge mobilisation, thus recognising and valuing the complementarity of diverse epistemologies.
- Enhance the development of critical thinking, including a critical approach to social realities and to pre-fab moulds for thinking; invite students to develop a rigorous analysis of situations and sound argumentation.
- Analyse and clarify different value systems (including one's own) that underline discourses and practices; accompany students in such a process; stimulate discussions concerning different "world visions", diverse cultures, and value systems that craft human relationships with the environment.
- Stimulate creativity, in relation to an artistic celebration of the living world and also in relation to the development of competencies for ecosocial innovation; foster imagination so as to conceive other ways of relating to our environment.
- Enhance collaborative and cooperative inquiry and learning for a better, critical understanding of socio-ecological realities; contribute to the construction of a collective intelligence—especially citizen intelligence—as applied to socio-ecological questions.
- Promote respectful debate and democratic dynamics in the classroom and in school.
- Encourage students to adopt coherent behaviour—in relation to their explicit values—and to conceive and implement sound action projects.
- Open school towards community, stimulate collaboration, and create partnership.

Attitudes and values: The teacher should be able to …

- Clarify one's own ecological identity, including political identity.
- Clarify one's own posture facing democracy, ecojustice, and pedagogical and social activism.
- Value and sustain ecosocial and pedagogical innovation.
- Adopt a reflexive posture through one's own practice by "Reflecting on the assumptions, values, and ethics that underlie our approaches to environmental teaching and learning [as] an important way of ensuring that we are engaged in an ongoing examination of the foundations that support the work we do as educators" (Inwood and Jagger 2014, p. 55).
- Search for coherence between being, discourse, and action, in light of values of authenticity and integrity, while facing ecosocial realities and pedagogical issues.

In order to develop a global professional competency in environmental education, the following strategies will need to be adopted:

- Integrate in teacher education curricula at least one mandatory specialised course in environmental education, allowing for the exploration of diverse complementary theoretical and practical avenues in this field.
- Infuse an environmental dimension into existing mandatory courses, such as sociology of education, philosophy of education, general pedagogy, specialised didactics, etc.
- Promote internships (practica) in school contexts where interdisciplinary and transversal pedagogical experiences already exist and more specifically in relation to environmental education.
- Prepare future teachers to value and undertake a continuous professional development process (reflexive experience in school context, participation in workshops, online programmes, or other strategies)[14]; enhance their capabilities to work with other members of the school context and our educational society who have acquired or are developing specific competencies in environmental education (parks, museums, NGOs, teachers unions, parents, community members, media, etc.). Co-learning and practice-based communities should be recognised here as key strategies.

Finally, so as to promote teachers' professional development as a coherent continuation of preservice education, there is a need, as mentioned earlier, to offer specific formal environmental education programmes for in-service teachers and also for school pedagogical counsellors, for the different actors of the school system, and for the non-formal organisations who intervene with teachers and students in different aspects of life in school.[15] In such programmes, the experience

[14] Sauvé et al. (2001) developed a guide for in-service professional development in environmental education for K–12 teachers, based on reflexive experience and co-learning.

[15] At Université du Québec à Montréal, a postgraduate programme is offered since 1996, aiming at professional development in the field of environmental education, for all types of educators, teachers, trainers, animators, communicators, and programme managers: http://ere.uqam.ca/

of participants should be critically examined and valued; inspiring initiatives should be celebrated and diffused.

Of course, teachers' environmental education initiatives cannot be dissociated from the process of reframing school curricula, in order to adapt its fundamentals and practices to our contemporary reality. This necessary shift calls for a greening of school culture, and for the involvement of its actors. It stands as a hopeful project for teachers, children, and youths, as well as the whole educational community. Environmental education—and its ecocitizenship dimension—can help stimulate pedagogical innovation and meaningful learning. It can counter teachers' isolation, open sharing spaces for educational tasks, and also create links between different actors of our educational society. It can increase the relevance and effectiveness of school education.

Such a deep change requires considerable political work with decision-making instances in the educational world. For this purpose, the ESE-TE initiative—Environmental and Sustainability Education in Teacher Education[16]—has brought together colleagues from across Canada. It is also in this perspective that a large coalition for the promotion of an Environmental and Ecocitizenship Education Strategy has been created in Quebec.[17] The ministry of education is called upon first, but also the ministries of environment, natural resources, health, agriculture, municipal affairs, and culture, among others. School is not an island, and education is not limited to formal contexts. It stands as part of a wider project for social education that mobilises our whole society.

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[16] See http://eseinfacultiesofed.ca/

[17] See https://www.coalition-education-environnement-ecocitoyennete.org/

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