Chapter 12

The Ecosystemic Pedagogy of Vila Schools

A Brazilian Educational Proposal for Social and Environmental Transformation

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According to Paulo Freire (1979), human beings cannot actively take part in history, society, or in the transformation of reality, if not assisted, while developing the consciousness of their potential to change the world.

Education, culture, society, and the environment are aspects of the same autopoietic cycle (Maturana & Varela, 2001), that is, the cyclical property of a living system to maintain and renew itself by regulating its composition and conserving its boundaries. The interactions of human beings with their social and natural environment, as they are lived and passed on across generations, characterize our culture and value systems and form the educational base of a society. Quality education, therefore, comes from the perception and contextualization of those interactions.

Brazil, a country with continental proportions, is rich in cultural and biological diversity, including more than 11,000 animal species, over 40,000 plants and fungus in 6 land biomes, along with an extended sea biome. Brazilian cultural diversity has been shaped along a historical complex of interactions among many different peoples. Today, Brazil has more than 250 peoples of indigenous ethnicity and native communities who speak more than 150 languages. Through colonization, more than 2 million Africans from 9 other ethnicities were brought to Brazil to perform forced labor. Besides the Portuguese, native peoples, and the Africans, many other people have migrated to Brazil, such as the Spanish, Jews, Germans, Italians, Arabs, and the Japanese, giving birth to descendants and building true communities.

However, all this cultural and biological diversity remains invisible to most Brazilians. The ability to coexist within this rich diversity is lacking and poorly developed, which prevents a holistic and authentic view of the nation. Many conflicts arise from this lack of cultural awareness which hinders the resolution of social and environmental problems that Brazilian communities face, as well as the possibility of constructing a more just and sane world.

Several aspects contribute to this situation, including a specific educational paradigm that is widely spread and valued in the country, which only aims at reproducing concepts and ways of existing in the world. This massive targeting of education does not take into account the importance of learning contextualization nor the development of coexistence skills within diversity and acting concerning the transformation of socio-environmental realities.

The Ecosystemic Pedagogy proposed by Vila School places the highest value on relationships between people, their community, and the environment. We emphasize individual critical reflection and social and environmental responsibility. We promote acting in constructive and transformative ways in the situations and contexts in which we live. The main objective of Ecosystemic Pedagogy is to develop the understanding that human beings are responsible for their relationships with themselves, their communities, and their environment, and, as a consequence, they are co-responsible for the reality of the world in which they live. Our perspective agrees with Paulo Freire's (2000), who indicated that while education alone cannot change society, without the right education society will not change.

AN ECOSYSTEMIC PARADIGM

Our ecosystemic paradigm begins with the assumption that all life is interconnected, and, therefore, we as human beings are not independent, rather we are interdependent. Further, human actions and relationships with other people and the natural environment have deep consequences on our lived experience and the world in which we live. Through our educational work, we aim to stimulate the development of young people who are eager to take responsibility for co-constructing reality, fostering positive relationships, living together within a context of rich cultural and biological diversity, and bringing a transformative praxis to the world.

The Vila School's motto *Building a Better World* highlights the main goal of our Ecosystemic Pedagogy toward which we have been working for over three decades. This vision of education as capable of enabling social and environmental changes is a result of a paradigmatic shift, one that considers students, teachers, extended family, and indeed all members of the school community as changemakers who are able to bring about systems change and

can help shape what we call a transformative ecosystem (i.e., a healthy and sustainable permaculture).

We promote change within the scope of the systems in which we live—social and environmental. This belief in one's ability to change the world rests at the core of the Ecosystemic Pedagogy curriculum, which foregrounds active engagement in cultural and ecological diversity, critical self-reflection, and collaborative learning. The development of these abilities is not restricted to students but extends to everyone within the school community: teachers and other professionals, students, relatives, community partners, and more. We believe that through developing each individual's understanding of their mutual interconnection and interdependence, they are able to reflect upon their choices and lifestyles and the impact of those choices on those around us. Coexistence is the very essence of the symbiotic movement of our everyday lives that we must come to embrace if we are to survive and thrive. These ideas form the basis for our educational vision.

Traditional schools however tend toward reinforcing existing social structures based on limited points of view of causal and linear sequenced order, mechanistic, determinant rationalism, content fragmentation, unidimensional view of culture, the decontextualization of lived experience, and the devaluation of corporeality and emotions. Such traditional assumptions compose a shared reality domain among the majority of educational social systems as well as in many academic and scientific systems. These paradigms and ways of thought focus efforts on the reproduction and conservation of fragmentary, mechanistic, and Cartesian dualistic ways of knowing rather than holistic views of life.

Maturana (1999) argues that, if we wish children to learn human values, they cannot merely be taught about values. They have to be experienced in daily school life. We cannot simply teach cooperation; rather, children must learn it "through living, for it is by living with mutual respect for others that mutual respect will come" (p. 66).

ORIGIN OF ECOSYSTEMIC PEDAGOGY

The innovative praxis of Vila School emerges from observing the need to create a new society, starting from the education of new individuals. In the beginning of the 1980s, in Fortaleza, capital of Ceará, a favorable condition emerged for making changes to the local educational landscape. Specifically, mothers and fathers were earnestly searching for an alternative to traditional education, while at the same time a new paradigm based upon interconnections between different fields of knowledge, between theory and praxis, and between thinking, feelings, and bodily awareness was gaining momentum. An education in which the body, the arts, and coexistence with nature could have a legitimate space in curriculum and in teaching and learning.

Within this milieu, a group of families gathered up to start what would be the embryo of Vila School: a nonformal space of learning through the intermingling of artistic activity, handcrafting, theater and drama, music, bodily expression, planting, and other educational activities. A space where children and "guides" established their goals together and accomplished specific learning projects. These projects included cultivating plants and gardens and watching them grow, harvesting the fruit and creating meals to eat and share; building toys and other crafts out of *junk*, wood and other recycled and reused materials; regular engagement in artistic performance (a new activity every week); hosting social and environmental awareness campaigns and public gatherings which involved all the families; and do physical exercise and meditation to promote physical and mental well-being and health.

This new proposal, which some considered to be extremely ambitious, while others took it as a natural progression, began attracting the attention of many individuals from all parts of the city, including university professors, journalists, artists, ecologists, and civic leaders. Soon dozens of city children began spending their afternoons in this shared space—the Backyard of Fatima Limaverde, the founder of this project.

At this time, in October of 1981, the project was called the *Backyard*. Soon the activities at the Backyard attracted the attention of a researcher who helped create a formal project proposal, which was the beginning of the Vila School and the formalization of this innovative pedagogical experiment. The idea to create a rich, diverse, multidisciplinary learning environment based on the cultivation of empathy, respect, and appreciation for cultural and biodiversity, which was rooted at the most fundamental levels on individual critical reflection began to impact the further development of what is now referred to as Ecosystemic Pedagogy.

PEDAGOGICAL ELEMENTS OF THE VILA SCHOOL

The educational practice of Vila School aims to bring knowledge together across disciplinary boundaries; to reintegrate body, feeling, emotion, intuition and thinking; and to link individuals to nature, as well as their individual and interpersonal social environment. Below are the basic elements of Vila's Ecosystemic Pedagogy, from kindergarten through ninth grade.

Curricular Web

Based on a critical reflection on traditional curriculum, we observed that the fragmented arrangement of content into different disciplines, isolated from their respective contexts, although familiar, does not contribute to the most

productive and meaningful learning of these subjects, and even less to the development of empowered socially and environmentally aware citizens capable of taking action for change. The disciplinary and decontextualized curriculum, in fact, focuses on some restrictive ways of thinking and acting in the world, such as constant reinforcement of certain mental operations based on differences rather than on building understandings of relationships between ideas, knowledge, contexts, experiences, and people.

Thus, Vila's Ecosystemic Curriculum (Nascimento, 2008) is arranged in a web form, which facilitates the visualization of the interconnection of disciplines and content areas across areas of knowledge, which is operationalized within various projects and learning scenarios. According to Heilman (2011),

> At the center of Escola Vila's curriculum stand three conceptual pillars: (1) the individual's relationship with oneself, (2) the relationship between human beings and their environment, and (3) the relationship between human beings and society. These three pillars are incorporated into lessons, discussions, homework, and art projects to reinforce the importance of each of these relationships. (p. 11)

The Curricular Web, therefore, brings together the goals of Ecosystemic Pedagogy and arranges the content along three interconnected axes: Caring for Oneself, Caring for the Social Environment, and Caring for Nature. From this new way of thinking about the curriculum, it becomes much easier for young people to work in groups, create different learning scenarios, and work with projects. Moreover, the web links the content of different courses and enables a much richer engagement and contextualization of current issues faced by the community with what young people are doing in school and in ways that help students begin to recognize and value different kinds of expertise and cultural approaches to problem solving.

Group Organization: Microsystems in Action

Vila's students are always organized in groups. The work developed in the different learning scenarios of the school is based on the development of collaborative learning skills. Each week students are organized by teachers into a variety of groups, which ensures that all students learn to interact with as many individuals as possible throughout the school year. Notably, the school takes special efforts to promote diversity among the families and students who attend the school, including different nationalities, cultures, religions, and social classes (about 20 percent of students have scholarships) and individual special needs.

Activities proposed by the teachers and students are developed in these groups, which promotes an active and authentic classroom space for the development of important living skills, such as:

- respect and appreciation for the diversity of opinions
- team spirit
- collaborative learning
- distribution of tasks
- group self-regulation
- conflict mediation

Rocha (2007) notes that in the Ecosystemic Pedagogical model, whenever possible, the teacher

> [. . .] proposes activities to the group and not just to students individually, thus favoring the development of social skills such as cooperation, tolerance, communication, and mutual help. In group work, students find the possibility of highlighting differences and learning to live with them: different ways of solving situations, thinking, expressing oneself, overcoming particular limitations and skills, and engaging with divergent opinions, etc. Valuing and respecting human diversity are major challenges of new education and also elements of environmental education. (p. 164)

Just as every organ in a living system has its functions, each group of students has its responsibilities in order to ensure the organization and functioning of a particular aspect in the classroom. There is, for example, a group responsible for distributing, storing, and ensuring the organization of all the collective material provided in the learning scenario. There is also a group responsible for nutrition, which must organize the collective natural foods provided by the school. There is also a group responsible for keeping the room organized and a group responsible for project management and execution. Learning to take responsibility helps shift the balance of power from the teacher to the students and helps them to seek out and develop creative and effective means of collective organization and cooperative management.

Learning Scenarios

With the aim of promoting transdisciplinary activity, classes are arranged differently based on different projects and learning scenarios. These arrangements cater to the needs of the students, and the nature of the projects they are working on are designed according to the research activities, key concepts,

and skills applications that students will need to be successful in the learning scenarios.

Vila's Ecosystemic Pedagogy recognizes two types of learning scenarios: structured and unstructured. Structured learning scenarios are environments organized to contain tools of all kinds that directly support the research, exploration, and construction of cooperative work products. Unstructured learning scenarios, on the other hand, comprise shared working spaces in which there is no predefined structure. In this cases, projects can be connected to what's happening in the school or in external spaces, such as a town square, villages of indigenous communities, the neighborhood around the school, or institutions that care for the elderly. Limaverde and Moraes (2008) point out that

> activities that constitute the daily school life of Vila's students are not "extra-curricular" activities, developed as something complementary to the privileged content in the classroom. In fact, these activities constitute the classes themselves. [. . .] It is a lived transdisciplinarity that presents itself not only as a theoretical-epistemological principle of the process of knowledge construction, but is present in daily actions, social coexistence, coexistence with nature, and the learner with oneself. (p. 265)

Among the structured learning scenarios, Vila has eight "laboratories." These laboratories take up the original meaning of the Latin word *laboratorium*, which means "place of work." The eight Vila's laboratories are learning scenarios where teachers and students work together with a common goal, involving knowledge from different areas, and which are interconnected in a transdisciplinary way. They are:

- *Fauna*: transdisciplinary scenarios that have a nursery of animals of different species. In this learning environment, students are motivated to develop conviviality skills with animals, as well as the ability to observe and contemplate. They are encouraged to research about the organic systems of each group of vertebrates and invertebrates, witnessing aspects such as locomotion, reproduction, feeding, and other typical characteristics of each species.
- *Vegetable Garden*: transdisciplinary scenarios with vegetable beds in horizontal or vertical planting systems. In this learning environment students are encouraged to choose a type of vegetable to be planted in groups, observe the entire process of vegetable development. They also research planting procedures, the time of development, and the soil and climate conditions that are favorable to the chosen species. They also study the nutritional value of each species of plants, as well as its use in cooking, as well as in preparing a variety of dishes.

- *Living Pharmacy*: Scenarios where there is a diversity of medicinal herb species commonly used to treat a variety of symptoms. Students are encouraged to value folk and traditional medicines, which are sometimes centuries old. They research the active ingredients of the various herbs and their correct use as medicines. In addition, they make ointments, syrups, creams, and cosmetics with cultivated herbs, as well as teas, patches, and compresses.
- *Orchard*: The fruit trees of Vila School spread in different environments and are often used by students. They study the different methods of tree propagation, such as cutting, layering, and grafting, among others. They also study the nutritional value of fruits and the different ways of using them in food and health maintenance.
- *Garden*: In this learning environment, students learn the importance of creating aesthetically pleasant and balanced environments in the composition of natural landscapes. They research ornamental plants, their use, and propagation, as well as the best way to arrange them in order to bring beauty and aesthetic balance to different living environments. Thus, students are encouraged to value the contemplation of nature in its harmony of colors, aromas, and other possible expressions.
- *Alternative Technologies*: This scenario fosters a creative environment, which includes the use of all kinds of equipment and small building construction materials, which are rooted in ideas of sustainability and eco-design that have in their conceptions the idea of sustainability and eco-design. In this scenario, students get to know alternative technologies aimed at harnessing solar energy for water heating, drying fruits, and herbs, cooking food; rainwater collection and utilization; water reuse in urban construction; paper recycling; and the reuse of scrap materials in the manufacture of household objects. In addition to researching these materials, they design and execute the construction of a wide variety of products.
- *Maintenance*: keeping the environment clean, pleasant and conserved is the main objective of this learning scenario. Students learn conservation techniques in electrical and plumbing installation, furniture restoration, household appliances, and the repair of a variety of objects.
- *Health and Eating*: a learning scenario which involves working in an experimental kitchen where students make natural and healthy recipes. They research and elaborate recipes of typical dishes from different regions of the country and the world, including experimental, vegetarian, and organic recipes, among others. In addition, they study the nutritional values of foods and the different ways of balancing a menu.

During the development of these activities in the laboratories, research is also carried out to complement the knowledge necessary for their execution,

which provides a space for the application of traditional disciplinary content and also for the interconnection between content areas and disciplines. These activities also take into account the desires and motivations of the students and the teachers, as well as the cultural contexts and the relationship of the learning scenarios and laboratories to urgent and nontrivial social and environmental issues.

In addition to the laboratories, there are five workshops that are also structured learning scenarios:

- *Visual Arts*: workshop where the student learns many art techniques, such as the various styles of painting, sculpture, woodcut, collage, and so on. The ultimate goal is to go beyond technique. This workshop promotes the possibility of using symbols, language, and other media for concrete expression, with the help of different materials, and internal factors, such as emotions, thoughts, opinions, and impressions. Ideas of balance and aesthetic diversity are also explored.
- *Handicraft*: workshop for creating handicrafts with various techniques such as crochet, knitting, sewing, macrame, papier-mache, and so on. Willpower and discipline are very well-developed skills in these spaces, as well as improvement and dexterity. Notions such as workmanship and durability are also explored, as is the reuse of items that would otherwise be thrown away, such as packaging and other disposable goods.
- *Theater*: theatrical expression in the most different genres, including mime and clowning. Using the body, voice, gestures, costumes, masks, and settings, students are encouraged to represent situations and transpose themselves to unlived experiences, experiencing different personalities and reflecting on the roles they play.
- *Music*: music is a kind of subtle expression, not visible but quite touching, that reverberates in feelings and impressions. Singing and playing instruments have been fundamental to human beings since early times. Developing musical ability and instruments reconnects us to the ancestral human being, who was able to put into practice the Brazilian saying "those who sing put their sorrow away" in the most essential way.
- *Body*: *yoga*, meditation, *tai chi chuan*, *do-in*, and massage techniques are part of the curriculum of this workshop. Self-knowledge and the health of the body and mind are the main goals of these classes.

Projects, Research, and Transdisciplinary Teaching Material

Projects are the basic tool for connecting all the work in the daily routines of Vila School. Each class develops their projects based on particular demands and interests, but at the same time in dialogue with other classes, who also

develop their projects, typically with a common theme. These themes involve social activities, interaction with nature, critical reflections, different examples of artistic expression, and appreciation of popular traditions.

With the objective of providing pedagogical resources to facilitate work processes with inter/transdisciplinary projects, Vila School developed teaching materials that promote the integration of formal subjects (math, reading, writing, etc.) and projects developed in the classroom, interconnecting knowledge of different fields within the same activity. Vilas' didactic material also stimulates group work, research, and the appropriation and the active construction of knowledge.

Evaluation

Typically school assessments, measurements, and evaluations are instituted only as control mechanisms, moving away from their real value which is to promote and create a feedback loop into the learning process and to be a tool for teachers to reflect upon her/his own pedagogical practices in order to improve them. The meaning of evaluation, indeed, should provide information to the teacher and to the student which helps them both to develop and learn.

Evaluation should not exclude students' multidimensional and holistic development, by trying to measure each student's knowledge in discrete areas. Rather, students' development should be taken into account as a whole, enhancing multiple aspects of their growth. Evaluation should attempt to integrate and involve all areas of learning. Moreover, in a dialogical process, students' evaluation cannot have only one perspective. The mix between teacher and peer-evaluation, self-evaluation, and eco-evaluation is necessary, in order to attend to multidimensional kinds of development. With these principles in mind, Ecosystemic Pedagogy generated its own evaluation system, which involves multiple criteria and attends to a wide variety of skill development. It includes a self-evaluation process, group evaluation, and the evaluation of different teachers.

Professional Development

Vila School teachers take part in continuous professional development involving an intensive workshop system three weeks a year, besides one Saturday per month and evaluation and planning meetings concerning the projects every two weeks. Continued professional development is essential for teachers' ability to deliver a meaningful pedagogical experience that impacts the students and the teachers themselves. Further, due to particularities of Vila School's Ecosystemic Pedagogy, with group works, inter/transdisciplinary

projects, and different learning scenarios, without a substantial focus on developing teachers, the successful implementation and coordination of activities could not be achieved.

Professional learning and development focus on more than theory. It also includes somatics, the arts, debate, and discussion, all of which work to help integrate knowledge, empower teachers, and to transform thinking and action. We know that a good curriculum is no substitute for a great teacher. This means professional development is an extremely important tool at the very foundation of the work of the school. This activity has helped to build a teaching community that is deeply committed to the principles developed at the school.

RESEARCH AND EVIDENCE

Vila School's work has become the focus of study and research in different universities in Brazil and in other countries. The reach of its pedagogical practice, beyond the significant and citizenship formation of the students, mobilizes change of attitudes and behaviors in the lives of the students, teachers and families in the school.

Research carried out at this school and beyond has sought out former students who are now adults, workers, and many who are already fathers or mothers and has demonstrated that the educational activities implemented at the Vila School for more than three decades of work have contributed to effectively developing more autonomous, socially active individuals who are concerned about environmental causes. In addition, these former students know the importance of developing their self-awareness, bodies, emotions, and artistic skills.

We can, through conscious and creative educational practices, build educational processes that reveal the skills of each human being rather than forcing them into a standard mold imposed by society. The global market too is asking for a new worker profile: someone who is creative, communicative, and able to cooperate and work in teams.

In her research, Rocha (2007) perceives some of the results of group work at Vila School:

> Children work very well in groups, they have autonomy to overcome small impasses, there is "respect" for decisions made by the group. It is very common, for example, for them to decide who will give a particular answer, such as the "such" puzzle answer. Sometimes, I witnessed some mistakes made by this one and did not see, once, one of them criticize, or want to respond by running over his classmate. This happens normally, without the teacher's interference. There

is a culture of "dialogue" installed in the school, there is respect for each other's differences and limits. (p. 165)

Regarding the Curriculum Web of Vila School, Bezerra (2012) comments from her research:

I consider this school curriculum organization to be evidence of itscommitment to a more comprehensive education and not just content based. This extension of the curriculum, through laboratory activities and complementary classes, is developed within the perspective of project pedagogy and transdisciplinarity. This model represents a confrontation with the fragmented and disconnected curricular model, with which knowledge is traditionally produced and transmitted and imposes on us, as educators, aspointed out by Morin (1999, p. 11), the need to rethink the school curriculum with the purpose of building a comprehensive view of knowledge, recognizing its complexity. (p. 156)

Heilman (2011) points out that, regarding evaluation, Vila School:

At the end of each quarter, the children evaluate their work in the class and give themselves grades based on personal reflection on their work over the quarter. The children also assign their peers grades based on their perception of the student in class and information on participation, attendance and homework provided by the teachers. This type of evaluation teaches children to evaluate themselves and others honestly and justly. (p. 11)

Moreira (2014) states that:

Vila School, by proposing to work with principles of ecology, brings the work around the social with great force, showing they understand that social and environmental conflicts are intrinsically related to social problems of great complexity, adhering to the sense of building a better world to everything that man raises in the world. Thus, it goes beyond talking about the environment, or working with recycling, building vegetable gardens or other consensual themes, but it seeks taking a stand in relation to what is elaborated socially, politically, economically, scientifically, culturally, etc., and with that, reveals its understanding that there is no separation between environment, man and society. (p. 140)

In her research on teacher education at Escola Vila, Sotero (2018) concludes:

Intuitively, the statement that teacher education at VILA not only subsidizes teaching pedagogical practices but also transforms people was revealed in a kind way by the research subjects. The speeches of these subjects revealed the

courage to open up to experience the unknown, which may suggest an answer to the paradigmatic problem of the divergence between the knowledge learned in the initial teacher education and the knowledge necessary for effective teaching practice at Vila School. (p. 114)

These and other research activities have addressed different actors in the Vila School Ecosystem: students, alumni, family, teachers, and staff. This research has brought some visibility in the national academic field, including research from other countries, such as Spain, Peru, and the United States.

DISSEMINATION AND OVERCOMING CHALLENGES

The Ecosystemic Pedagogy called attention to other schools that sought to implement this proposal with the help of the Vila School team, both in private and public education. Adherence to Ecosystemic Pedagogy requires openness and willingness to face challenges, starting with the paradigmatic change necessary not only for teaching practice but above all for understanding the purpose of education. In this way, an ecosystemic network is established among all partner schools so that mutual support is possible, always with the systematic support of the Vila School team itself. With the intention of providing better support, Vila School prepared teacher and management team training resources, both online and face-to-face courses, and offered as well a schedule of online meetings, in which it is possible to discuss the demands of challenges that occur and to help generate solutions collaboratively.

While collectively facing the initial difficulties that had been discovered, it was found that, during the first year of implementation, partner schools had already incorporated the main characteristics of Ecosystemic Pedagogy in a structural way, causing changes beyond the school, involving the surrounding community and families of the students. According to the experience of implementing Ecosystemic Pedagogy, it was observed that both the private and public school contexts are successful during the first year, but there are some particularities between these two spheres. Private schools that start implementing Ecosystemic Pedagogy have a tendency to endure, while public schools cannot keep up the proposal for more than one management term or cycle. This is due to successions in the political contexts of many cities, where the elected management must undo the policies implemented by the previous management, always proposing new approaches.

This characteristic, which is present not only in the Brazilian context but also in many countries, makes fruitful long-term results impossible, although it generates excellent short-term results during implementation, such as the reality-transforming action through the numerous projects developed by each

class in a single year. Generally, each class develops at least six projects throughout the school year, often culminating in intervention actions in different social and environmental contexts of the community.

Thus, we think that Ecosystemic Pedagogy still has a long way to go, always in the perspective of reaching new partnerships in the most different contexts of the planet, always seeking to achieve its goal of building through education a better, more supportive, humane world, a world open to coexistence in diversity.

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