



## What about Education and Schooling for Sustainable Development?

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### Abstract

Schooling as a form of formalized indoctrination has come to an end. In the new global and (g)local order a new context of interrelations re-shapes school organization searching for new spaces and new nested niches to perform key ecological principles of sustainability and community participation. In this paper, we get to sustainability from ecological premises contextualize together with educational development premises. We clarify the real links of both to give a context to what it means looking at school education from progressive principles, which resumes to look at each one's (country or human) history, conditions for development, in order to do the best for growing, by not accommodating the system of education to strange external pressures which pretend to uniformize, fragmentize and exclude.

**KEY WORDS:** Practice architectures; Ecologies of Practices; Sustainability; Community; Development.

### GOOD PRACTICE AS AN ADDED VALUE

The search for new models to professionalize teacher awareness through active and thoughtful making opens today a shift to practice searching to promote an educational development criteria based on feasibility, rationality, justice and sustainability. The good educator is a knowledgeable person with technical ability to achieve educational objectives if he/she has the appropriate means, and if he/she has an open disposition to act properly. However, good teachers' skills, or virtues, are not given by nature. They are molded by the means of different circumstances, by education and experience, and they mediate arrangements at several levels of actions, which are the product and result of good schools, good leadership, good educators and good practices.

Education helps us grow as human beings. Through what we say, or participate: sayings, we speak languages and use shared codes that allow us understand, understand others, and the world. As people, we are part of shared practices and activities which are shaped by what we do: doings. In a similar vein, the groups: family, neighborhood, professional bodies ... shape our identity development and guide some roles and relationships with others: relating, referring participation and belonging [14].

Kemmis and Grootenboer [12], in their analysis about the "practice architectures" which shape how school education works (1), relate a three-dimensional context to prefigure what really happens when schooling. To say: \* ways of understanding in a cultural discursive level referring languages and speeches; \* some skills and abilities in an economical and material

space which relates to the physical and natural world, and \* solidarity, values and emotions in the realm of social and political systems of life. According to these authors, the three dimensions are shaped through language, work, and power [10]. At a micro level, the sayings, doings and practices, shape how things are for the educators. At the macro level, they all fit as actuality and possibility in a more general educational setting.

The "practice architectures" of education, are built around interrelated settings referencing the people involved, the external agents and organizations, institutions, spaces, and others. That is, these interrelations are established: \* by teachers and students, \*by curricula developers, \*by text authors, \*by planners and managers, \*by training experts, and many more. From another perspective, according to Bronfenbrenner [3], this can be also analyzed depending on the interrelationships at various organizational levels. Analyzing these different levels should lead us to explain the complexity of the influences and interactions between individual learning and the associated different systems. To say: \* micro systems that shape closer relationships, and relate the interactions in the immediate environment; \* meso systems that shape the relationships in the school environment and that refer interactions in the proximity systems; \* exo systems that shape the interactions related to the school regularization and refer to relations in the systems not directly involved in the school; \* chrono systems that shape the interactions related to different external conditions, this is, the influences and changes that occur in related systems, though not so directly with what it is moved in the school space, and \* macro systems that shape those interactions derived from dominant social and economic structures, once those structures that influence the setting of the values, beliefs and practices.

From one version, or another, related to the virtual world of the practices, and/or related to the interrelationships which move in an organizational order, the practice environment is dynamic and evolving. The practices are reproduced and transformed in time and space, depending on how the changing demands and needs develop in some or other contexts. The territory of the individual and the social, is organized under assumptions related to different practices in: generic communication practices, social connection, production and consumption, that is, in some sayings, doings, and relating that format cultural, social, material and economic strategies. And all this will have its impact on what is done, and can be done, in a school and educational setting.

All practices have a meaning. A complex practice, for example, an empty classroom, has a meaning. The curriculum and schedules are planned. The classroom is monitored, and it is known who the teachers and the students are although they may not be in that moment in the classroom. The students will attend the school. The school will operate, and will continue, or not, as planned, as resources may enable, or prevent. The context of the classroom, even empty, prefigures, in this sense, and links in complex form, the contents of the sayings, doings and relating of the different school situations. In this context, it will be important to develop integrated practices and to take care of them facing scattered practices [23], always under some nexus of actions, with rules and order. It is so that practices have and will have substance and materiality as an open space to meeting the social, as a discursive space, as a relational space, and also as a set of physical and economic conditions which favor school and educational possibilities.

Models of school management and evaluation open to collaboration, innovation and improvement, are the most appropriate way to improve practices. The realm of the social, at this point, orchestrates dynamic connections through participation in one and another action in relation to others and the world. Revealing what moves in a school setting, is thus in time to

improve what it is done, what it is said, and what it is supposed to be done. It has also a potential effect in the life of the organizations.

From another point of view, educational design is a task which requires knowledge, skills, wisdom, and a capacity for analysis and critical reflection. It is a task of constructing learning architectures and practice architectures that enable and constrain the work and the lives of students` and teachers` inside and outside schools. This represents that the people responsible for the design of education, have their share in the responsibilities of making futures through education. Improving practices, like the practices of education, demands improving the practices of individual practitioners and demands creating the institutional and social conditions that will support changes for better.

### **THE PRINCIPLES OF ECOLOGY APPLIED TO EDUCATION.**

For Kemmis and Mutton [16], the principles of ecology fit with education for sustainability, in the sense that the "the practices architectures" are shaped by other emerging practices to give a distinctive and sustainable substance. They are intertwined in human and social projects (recovery, improvement, advance ...), they are done through language, activity, work, power ..., they follow an order, an arrangement of the discourses, an arrangement of the objects in the material world, and care the relationships of people and objects in a physical and natural world. It is at this point that, evaluating, analyzing and valuing, the management and school leadership in their constitutive premises, and in its working order, will give clarity to the analysis of school performance practices in a particular context.

To transform the practices, and to transform their "architectures", contributes to change the properties of educational feasibility. And this extends to ways of: \* ordering and arranging educational discourses and sharing in this regard the semantic spaces, \* sorting and arranging some activities and different ways of working in a material world of facts, actions and resources, that share a physical space and time, \* sorting and arranging the relations between them and other groups, people, and objects, that foreshadow a shared social space , and \* sorting and fixing the ways in which individuals and groups can meet and interact in one and another educational context. Changing and transforming the practices therefore, is to change what people say and think: the speeches, what transfers, what is said and done at the different levels. Changing and transforming the practices, is looking for ways to model the activity and the work in action and participation. It is to change what people refer and is already referred, it is to change the relationships between the people, the objects and others, and it is to change the organizational and operational "architectures". It is more than changing the practices, because the practices are constituted and changed under an order of interrelationships that must be made explicit to advance.

By practice architectures, we are referring to the "social, material and discursive structures that enable and constrain educational practices". Practice architectures, draw attention to the reality of teaching practices. In this sense, the interdependence of one and another practices, refer orchestrated active actions, such as sliding in a space of relationships between leadership and professional development. Ideally, some actions lead to others, and are transformed by evolution and development in academic and social practices. Socially established human activity is cooperative, and practices are waiting for us to occupy them. Participation characterized as a distinctive human social project, derives from agreements between actions and activities. If its guidelines are interpreted, explained, or justified, under some speeches, we

are in the realm of the sayings, if it is under some models of action, we are in the realm of the doings, and when it is to link people and objects, we are in the realm of the relatings.

According to Landsberg, Kruger and Nel [17], the challenge of the education system is to understand the complexity of the influences, interactions and interrelationships between the individual learner and the numerous other systems connected to the learner. An ecological systems theory, following Bronfenbrenner [3], involves the scientific study of the progressive, mutual accommodation between an active, growing human being, and the changing properties of the immediate settings in which the developing person lives, once this process is affected by relations between the settings, and by the larger context in which the settings are embedded.

### **ECOLOGIES OF PRACTICES AND SUSTAINABLE DEVELOPMENT.**

As Schatzki suggests [23], the sayings and doings, plus the relatings [12], compose a particular kind of practices which hang together in a characteristic way to give a sense of purpose to practices understood as human social projects of a particular kind, and to shape the commitments of participants to achieve a particular kind of purpose. The practices, as such, are embedded in practice architectures clustered together in relationships with other practices to give form to what can be described and “metapractices”, or practices which shape, are shaped, influence and are influenced, by other practices. This in the field of education, following Edwards-Groves, Kemmis, et al [8] can be resumed as follows:

- The academic and social practices of students in one or another school.
- The new and innovatory educational practices of the teachers in these schools.
- The metapractices on Initial and Continuing Teacher Education which form and shape teachers' formal and informal practices.
- The metapractices of educational policy and administration which determine the resources, infrastructure and policies, that influence the conditions for educational practice, leadership and others.
- The metapractices of educational research and evaluation which reference the practices of education and other metapractices. They suggest how to understand one another, or how to monitor the conduct and the consequences of one another.

Under this frame, we can connect practices and meta-practices as living things organized in interconnected “ecologies of practices” which trace an ecological flow of a learning community open to collaboration, awareness, mindfulness and wellbeing. This on its site, and such as described by Edwards-Groves, Kemmis, et al [8], reinforces connections with positive approaches to educating.

To change education, involves changing the practice architectures and the mediating preconditions which prefigure educational practice at the level of the sayings, doings and relatings in one and another level and sequence and in the different stages in the educational processes. This means that changes in the sayings, doings and relatings, hang together to give form to new ways of working which provoke sharing a professional ethos of collaboration, awareness, mindfulness and wellbeing. And coherent patterns which “hang together” [23] allow us to know how to go on in practice in a coherent and appropriate way.

Kemmis and Mutton [16] when referencing the ecologies of practices refer to an educational space organised in: \*practices related to the academic and social practices of the students; \*innovative educational practices of the teachers, \*innovative educational practices of the students; \*initial and continuing educational meta-practices that shape related practices for teacher professional development; \*target management and administration meta-practices

which determine existing resources, infrastructures, possible policy development..., which influence educational practices and professional leadership, \*research and educational evaluation meta-practices which shape other practices and meta-practices and how these are understood from how the educational processes happen to develop.

The meta-practices [11] implicit in all policy development, management and education administration, shape teaching and learning practices that may, or may not, energize some facilities to planning time, equipment, resources, staff, rules and regulations. The meta-practices related to curriculum development, for example, help to fit ideas about what is taught, can be learned, subjects, objectives..., and the meta-practices related to teachers training, give form to the how and what is taught what also extensible to continuous training. On the other hand, the meta-practices of research on education and evaluation draw to different forms of education in different educational institutions: schools, colleges, universities...

### **CAPRA'S ANALOGY OF ECOLOGIES OF PRACTICE: LOOKING FOR CONNECTIONS IN EDUCATION.**

The ecological relationships settled by Capra [5] aiming to a joint of principles of ecology, sustainability, community, and the basic facts of life, cover a significance for determining whether practices and ecologies of practices in education can be considered living systems. They both are based in networks, nested systems; sustain relations of interdependence open to diversities, cyclically organized under flows of energy subject to dynamic balance to favour and push development for better. These different levels of interactions, networks and nested systems which flow up under ecological sustainable relationships in educational practices left aside under modernity, are to be recovered (2).

The systemic organization of the educational meta-practices which can draw an analogy with the species (practices) and ecosystems (ecologies), keeps a similarity with the development taken by Capra [5] around key ecological principles of sustainability and community while referencing living organisms and communities of organisms within ecological relationships. Capra [5], in this sense, states that there are a number of key concepts which provide "principles of ecology, principles of sustainability, principles of community, or even the basic facts of life".

Networks: Members of ecological communities derive their essential properties, and in fact their very existence, from their relationships. Sustainability is not an individual property but a property of an entire network, and it marks the different practices that derive their properties, and their existence, of its relationships with other practices. For example, leadership development, and professional learning meta-practices, are connected in practice networks that can be observed as shared practices of teachers` and students` that can lead to collaborative and collegial practices which have an influence in a space while affecting to practices in other spaces. Interconnect practices and share observation is possible. If educational processes are developed under hierarchical style leadership, or under more collaborative ways, the performance architectures will be built differently according to how and where messages are transferred under regulatory actions (speeches, actions and relationships) at all levels: from ministries and councils, to regional coordination, district, school management, school staff and internal coordination (seminar, department, specific plans, support, guidance, and others), administrative and service staff, families and social groups, and students, or vice versa, in the case of specific actions: disciplinary problems,

failure, neglect, specific treatments, including situations of inclusion and / or exclusion, and others. The processes in the chain of interconnections would develop in ascending or descending order, from the students to the education authority, or vice versa. What appropriates in any case, in an ascending or descending order of discussion and proposals for improvement, is to reorient the processes as they are developed in the whole chain of what is said, done and interrelated.

Transferring this to an ecological context, networks would explain the Trophic Chains or Food Network. A food chain is the path of food from a given final consumer back to the producer, or vice versa. It could also be defined as the transfer of matter and energy that make living things from one trophic level to another. Trophic levels are composed of the group of organisms which possess similar eating habits to obtain material and form what is a part of the biological communities or biocenosis [18].

Nested systems: At all scales of nature, we find living systems nested within other living systems-networks within networks. Although the same basic principles of organization operate at each scale, the different systems represent levels of differing complexity [5]. Life is to be found at different levels, for example, in cells within organisms, and organisms within communities of organisms. As nest networks, they trace practice networks at levels that are interconnected by how they include, for example, aspects of regularization, or leading, at large-scale or low level of activity at different levels. In a similar sense, when referring to working procedures in schools, and among teachers, leadership project activities are organized in specific activities at different organizational levels and in and for a specific time. If we envision a particularly collaborative learning environment with the meaning and sense of a learning community, the scope of relations of inclusion, and others, which fits, can be organized in a few development activities which will mediate in an explicit way in relation to particular activities exercised by the students.

Using the simile of the ecological context, bees could serve as a clear example of nested systems. They are social insects with a strong sense of community within an exclusively female society that revolves around the queen bee, who is the mother of the entire community. There are bees that specialize in being guardians and defend the nest, others in caring eggs and hatchlings, and others who are responsible for bringing food (nectar and pollen) to the hive, making honey. Although there are approximately 20,000 species of bees [22], honey bees (*Apis mellifera*) pollinate a wide variety of flowers. When they gather food from the flowers, the pollen grains adhere to them, allowing the transfer of pollen from one flower to another, which is fertilized resulting in a new seed and fruit. Each worker performs up to 30 daily departures, and each trip can come to pollinate a total of 50 flowers [1]. This means that a single hive would be able to fertilize the flowers in an area of 700 hectares and that the economic importance of honey bees is immense as they intervene in obtaining one in three meals. Without the action of bees, many food chains would be broken at the level of primary consumers, and a large part of the common fruits and vegetables would disappear from the shelves of supermarkets, losing the diversity of foods that are now known today [1].

The architectures of educational processes fit here again in the whole chain of interactions described above at some specific levels. See for example how to resolve educationally the situation of some groups that do not fit in generic treatments: deaf, of very specific handicaps, high capacities, or other, and where, and to what extent, would correspond to strengthening the architectures of the system. In a similar sense, and in the case of groups that for one or another reason move in situations of exclusion, the architectures of the system fit to macro

levels in what language, culture, identity and power as school action regulators are certainly interconnected [7] to enhance school actions for success. Cultural identity plays an important role in how people envision and react to the world, how we see ourselves and how we learn. A sense of belonging socially and in school must be appropriately addressed in a complex and mixed world from positions of ethnicity, race, class, gender, language, culture, identity, creed religious, geographical origin, and other [9].

The real world is much more complicated than a food chain, because the complex world of relationships that affects humans goes beyond the logic interface in a food chain. It might only relocate for a greater similarity to a food chain altered by weather conditions that change and shift as it loses balance and sustainability. Since 2006 in Europe, it has been observed annually a mass disappearance of bees hives at a rate of 20% [22]. If more than 80% of flowering plants are pollinated by animals [22], over 30% of the crop plants and fruits depend on pollination by bees. The cause of their death, which researchers categorized as CCD (Colony Collapse Disorder) is not exactly known, but it is believed that new synthetic pesticides (neonicotinoids) could attack the centers of the insect nervous system causing disorientation, change of behavior and death of workers away from the hives. Through this example we can see that the interconnected systems as interrelated food chains, take us beyond as educational events related to social complex conditioning and changes do. And these interrelated chains can lead to very serious consequences for human development [20].

**Interdependence:** The sustainability of individual populations and the sustainability of the entire ecosystem are interdependent. The exchanges of energy and resources in an ecosystem are sustained by pervasive cooperation [5].

They both derive to contextualize energy changes in the development of one or another educational process throughout their chain of architectures: from the regularizations to teachers and students, and it also marks a similar ecological drift. The sustainability of practices points to different spaces for practices which interplay in different contexts of reality, as different actors, which draw one or other response in the different levels of the relationships of interdependence. The ecosystem derived hence, depends for its sustainability of the relationships established with other ecologies of other practices, and the educational relations derived here situate alike at different levels. See, for example, learning communities and their aspiration to link school work, to the context, the teachers, the students, and the ways to do this.

Bascompte [2], analyzed the interactions between species and references this to climate change. For him to take into account the amount or species as it is being done in most studies on biodiversity, is not enough. He suggests incorporating the interactions between species, and highlights the importance of interdependence among species, maintenance, conditions and interactions. Looking at interdependence from the point of view of school education, the overall numbers of school failure, or desertion, leave aside and do not consider the school conditions and circumstances which can be a cause of failure or desertion, when failure is something shared and interdependent of many and different circumstances. Students can fail, but teachers fail too, and school materials, school circumstances, the conditions of work, and the interactions at the different levels..., have also their deal.

**Diversity:** A diverse ecosystem is resilient because it contains many species with overlapping functions that can partially replace one another. The more complex the network's patterns of

interconnections are, the more resilient they will be [5]. Different kinds of organisms are necessary to one another in an ecosystem, and such a view implies difference but also distribution of entities in time and space.

Some or other ecological functions are replaceable among them. For example, learning communities evidence different settings in different places depending on the different types of activity. This represents in the case of teachers that actions can and should be organized in different ways in different schools to try different aspects and different work units. The result is: leadership diversity, diversity of processes, diverse professional learning, diverse teaching strategies and learning strategies, and elasticity to adapt diverse practices in diverse circumstances, in order to be open to different paths and different means and to mark different learning styles ... Using again the ecological analogy of bees, these insects have a very complex social structure in which there is a variety of tasks. The queen bee is the mother of the entire community; the guard bees defend the nest from intruders; specialized bees care for the eggs or young; specialized workers provide food (nectar and pollen) to the hive to make honey. There are a variety of functions for the proper functioning of the hive, as it happens in our society and it will depend on the balance of these diversity relationships.

Diversity relationships vary according to the ecological cycles referred by Capra [5]. They trace their characterization as an involvement key. This means that, as it happens with food chains the practical cycles in some and other situations can be observed. For example, under the parameter of cultural discursive reproduction, practice can increase the capacity of the participants to continue practicing in the future. In this sense, the practices related to learning communities mark, for example, that the referential features of a community, feed and are fed by their own circumstances and practices. Consequently, such cycles of sayings, doings and relating, trace oscillations between relations of reproduction and subsidiarity. It will proceed then to adapt practices in each context and situation to what it is possible and feasible, not to what is regulated because it simply passes one or other education norm or law.

But no education law can change the reality because it is said and legislated. It will not change either the reality of what it is done, or the realities of interrelationships at all levels: And this is so unless some of the system architectures get altered because the norm includes measures to change the architectures. Overcrowding of classes, cuts in support and resources, changes in school integration policies, opting for active teaching methods or transmissive, opting for less time for teamwork, or for school projects and others, influence how education works. Say for example, the regulations about educational competences are not finding a proper way in South America, or in southern Europe. The curriculum organizers which give a detailed description of educational contents are so determined, that they close the way to organize an open content frame to develop competences. As it happens in Peru, for example, but also in many other countries, competences resume to something which is to be taken into account as evaluation criteria, but what evaluated, are educational contents.

Performance architectures are constructed by how messages are transferred and how regulatory actions at all levels are developed, in this case, under a descending sort: from ministries and councils shaping speeches and regulations. The framework of actions and relationships is tied to how coordination is regulated in regional sites, counties and districts if they have any authority in this. The how to transfer this to the school management, teachers and school coordination levels (seminar, department, specific plans, support, guidance, and others), the fitting of the administrative and service staff, families and social groups, and students, will prefigure the development linked to the conditions in which one or another Law,



or norm, develops. The order of discussion and action, the approaches for improvement, if applicable, should lead to reorient the processes as they are developed throughout chain milestones related to what it is said, done and interrelated.

Cycles. "Matter cycles continually through the web of life" [5]. For example, in food chains, "an ecosystem generates no waste" [5].

In an ecological context, the cycles are identified as material recycling cycles in ecosystems. These cycles recycle nutrients through the soil, air, water and living organisms. Nutrients are elements and compounds that organisms need to live, grow and reproduce. It is in these processes that they connect and are connected to the past, present and future forms of life. Within this recycling processes, we find biogeochemical cycles directly or indirectly driven by incoming solar energy and gravity, including the cycles of carbon, nitrogen, phosphorus, oxygen, sulfur and water known as the hydrologic cycle [24].

The four basic ecological cycles and processes of ecosystems are the water cycle, biogeochemical cycles (or nutrients), energy flow and community dynamics, ie how the composition and structure of an ecosystem changes after a disturbance (succession).

School education is organized in successive cycles and vertebrated in the management of each other stadiums going structuring educational contents, ways of working, coordination of one and other professionals ..., cyclically integrated. The cyclical relationships also extend to the entire space of meta-practices and practices that are organized in the educational environment: proposals for innovation, of educational research and evaluation, of legislation and educational regularization, of teacher training, of teachers and students in the different scales of educational processes, and they store in one and other circumstances within the history of education as it has happened, with the requirements of different contexts, with the development requirements and the demands for formal education, and others.

Flow: "All living systems, from organisms to ecosystems, are open systems. Solar energy, transformed into chemical energy by the photosynthesis of green plants, drives most ecological cycles, but energy itself does not cycle. Ecological systems are "dependent on a constant inflow of energy". [5]. It is characterized as a process of evolution and transformation. This represents the energy fleets, as it does the ecology of practices which is transformed, dissipates, loses, or stored. And that happens equally with: \* the meaning in a semantic dimension of language; with \* the survival in a spatial, temporal and material dimension as a means of working activity which is reproduced and modeled over time according to particular relations, or more general relations; with \* the solidarity that is held in a framework of relations of belonging to one and other practices considered as a dimension of social space, and also by the power, while in floating and connecting through some activities, and also, under interdependence relationships, deliberate, or explicit, depending on the expectations that one may have, and depending on the practices developed. Community learning relationships, reflective dialogue, language games in some / other learning communities, hierarchical relationships that can be established, make such a connection between the language reference, the ways of doing things all through, and the ways of associating, referring, and thinking.

The architectures of the education processes as they are performed relate to the chain of interactions in school and at internal educational functioning to micro- specific levels. For example, to manage in situations of special groups: specific handicaps, deaf, blind, hyperactive,

high capacities, or others, support resources should be designed and fit into specific school educational plans. To flow in this open space, we have to make explicit where, how, to what extent, or how to coordinate, in order to be able to strengthen the architectures of the system. In the case of groups that move in situations of exclusion, the architectures of the system must also fit in detailed school performances with measures to support how to deal with multi school literacies, use of languages, cultural dimensions, etc. Everything has to be done according to an order of appropriate collective plans to coordinate actions in the schools.

This educational flowing could be explained in an ecological context as a phenomenon comparable to the energy flow of the ecosystem itself. This flow goes from autotrophic organisms to those that feed on them, which in turn are called herbivores and are prey of other animals called predators. These will be found in the last link in the chain. This will be a real life chain in which each link corresponds to a living being. The principle of conservation of energy states that energy cannot be created, nor destroyed, merely transformed from one form into another. In these transformations, the total energy remains constant, ie, the total power is the same before and after each transformation.

In each transformation, part of the energy is transformed into heat. There will always be more primary producers than herbivores and there will always be more herbivores than secondary producers (carnivores). This forms a trophic pyramid.

Development: "All living systems develop, and all development, invokes learning; development occurs through stages, each one sustainable in its own right although it may then be superseded". [5]

An organization follows articulated practices in stages. Say for example, practices related to learning communities are based on some ideas, some activities and relationships, that give a sense of flotation in their management models, a waterline between agents, whether management, executives, staff, teachers, students ... it is also floating in the relationship between learning communities and teacher professional development options and personal development and learner skills...

Educational processes are organized in stages, from early childhood education, to elementary education, reorganized next as primary and basic in most territories. These stages have been regulated from the nineteenth century on [29]. The extension to secondary was in early twentieth century. Next higher education, continuous and lifelong. But school education is also organized in stages of perception regarding the transfer of educational activities in their format of sayings, doings and interrelations and the knowing how to do it.

In an ecological field, ecosystems are dynamic and its composition and structure changes over time. Disturbances such as fires, hurricanes, droughts, floods, plagues, earthquakes, substantially modify grasslands, forests, marshes, mangroves and other communities. These events are known as disturbance regimes and change from region to region depending on weather conditions. After a disturbance event that affects some populations, the process of community changes to its previous state (mature). This is called ecological succession.

In school education we can use a similar characterization. An educational process which evolves to school drop represents a denial of the right to education. Harassment, identically, has educational consequences because the educational processes resulting can be as irreversible as some of the events referred in natural contexts. See, in another sense, the

opposition between a subject like "Education for citizenship" opposed to religious education. This goes back in the time. The organization of the school systems reasonably opted many years ago for secularism. In a similar sense, the organization of the subject "Social Studies and Social and environmental studies" opened its way years ago in Anglo-American territories (Australia, Scotland, New Zealand, some states in the USA and provinces of Canada, and others) to organize jointly the teaching of history, geography, economics, sociology, anthropology, and religions [27], is an option to organize civic studies properly in times of peoples mobility [26]. But in many countries religious education and national sentiments are the preferred option. Neoliberal premises applied to school education, promote a spirit of fragmentation and privatization, and gets similarly back in time to when public school was considered a quality service [29]. Development then can get on or backwards depending on the politic circumstances of schooling. Dynamic balance: "All ecological cycles act as feedback loops, so that the ecological community continually regulates and organises itself, while living systems adapt to changes within and pushed by external pressures" [5]. It defines its significance in the organization. This marks that the ecologies of the practices can be adjusted in self-organizing processes to establish a continuity in the relationships between internal and external pressures, or alternatively, in the ways of conducting relations inside and outside schools. Each meta-practice whether from management or legislation, professional development or professional learning, or other, exerts its influence on the others. And given that the practices, support each other, they are replaced, are reinforced, get more sophisticated ... and also trace a shift from hierarchical, or collaborative relationships, depending on the styles of organization, the educational performance, life, values, etc.

In ecology the dynamic balance is defined as the state of the plant and animal populations in which interactions with physical and chemical factors of the environment and resource utilization make only minor variations in the ecosystem. A dynamic equilibrium occurs when two reversible processes occur at the same pace. Many processes (like some chemical reactions) are reversible, when they are in a dynamic equilibrium, ie reaction products recombine to generate reagents. According to Nicolau et al. [21] the clearest example is called chemical equilibrium in which various substances coexist in a system, reacting with each other and keeping the proportions of each. When the conditions are externally altered (for example by increasing the temperature), the reaction in a sense creates a new dynamic equilibrium subject to different circumstances. When living organisms and their behavior are incorporated into this analysis, the concept of dynamic equilibrium can be applicable, once there are internal changes in an ecosystem (births, deaths, predation, etc...).

In education, the dynamic balance is summarized to a good school environment, good atmosphere, some forms of cooperative and collaborative work for the good working, good understanding, communication, knowing how to face the problems, knowing what is necessary to work well, and coordinating properly.

But the term has other applications. It refers to stable situations and processes in balance. In ecology, a population of organisms that does not change is sustained from the balance between the birth rate and the death rate. In education, the parallelism between including and / or excluding one and another, or some groups, oscillates because the excluded fail, or drop out, as individuals or groups: some handicapped or some sections of social exclusion. In the field of health, the term dynamic equilibrium has come to use. A healthy body is in a state of dynamic equilibrium when all internal processes are in harmony and balance. Anabolic and catabolic

processes work in harmony and all the cells that form the body work together to maintain this balance.

### **CONCLUSIONS: TRANSNATIONAL ACTIONS IN EDUCATION AND REALITIES IN PRACTICE.**

In our global but (g)local context and situation, education can not be resumed as a form of initiation to lead us “into the lights” as it was in times of Enlightenment. We are living times when education is to get us “out of the darkness” of our misunderstandings, misperceptions and mistakes regarding the social and natural world we inhabit. Evolution is pushing us to keep and maintain and this can be done from ecological discursive, moral, social, material, economic and personally cared sustainable premises.

Religion and politics have predefined school education to a western dominant order. This model has been exported everywhere under globalization following a strategy which resumes to domination and control of nature and development. The whole panorama has changed today. Fragmentation, privatization, accreditation, push the system not to be sustainable. To charge students with packs of not much useful knowledge, to prepare students not capable of thinking to develop, to defend the benefits of some, forgets development. The postmodern order is diverse and to care about diversity changes the sequel. Reforming school education under international World Bank and OECD colonial premises does not promote human rights and equity values and is not inclusive anymore. That is why, what important today is to look back at each one, at the diverse conditions for development to organize new paths for education and schooling [28]. Otherwise, the time for school education is over [29].

This situation reminds former processes of transition when some (people) migrated from villages to cities to re-shape themselves in a new environment, to reorganize themselves in a new time and space, and to grow both personally and socially [4]. Today we humans as a whole move and we all change. The social organization has changed, the life styles and the systems of beliefs have changed, and the space for education and school education is wide open. The function of education is not to validate marginalization and exclusion but to promote positive behavior. The modern premises to development were control of energy, control of power, control of raw materials. But we get back to the provision of food and water as something still important for the future. People moves searching for better conditions of life and migrations have changed the world order of development in our cosmopolitan world [25, 26].

The site of the personal and the social pushes today diversity as the new curriculum organizer in which students, teachers, families, and communities ... at all levels: micro, meso, exo, chrono, macro [3], are to grow emotionally to be socialized positively, to learn together, to participate, to share, collaborate, flow, become aware, mindful, ... from inclusive perspectives, and under premises of democratic participation, human rights and equity. But better educational practices demands better educators, better schools, better resources, better funding, better supports and others. It is at this point that practice architectures as a strategy and a technique to elicit, allows us to clarify all interrelated perspectives of educational analysis for better consciousness, to improve the quality of the relationships, to develop participation, and for understanding and developing to better. Ecologic premises settle new conditions for sustainable development and, if applied to school education, create new conditions for transformation.

### **Notes**

1. Organizations, institutions and settings, and the people in them, create practices which have content and a meaning at each stage of developing, in each moment of planning,

acting, and validating. From a different perspective, people within a school: teachers and students, families and principals, and also people outside the school: curriculum developers, policy makers, text book writers..., construct their practices around particular units of work. And they all play their roles in shaping how to predefine the work to be done, the pedagogy to be developed at the level of actions, and the kinds of relationships established and which can be established at all levels and under one or another purpose.

2. See at this respect the work of Capra [5], Schatzki [23], Edwards-Groves, Kemmis, et al [8], the research of the Pedagogy, Education & Praxis Group led by Kemmis et al. (from 2006 onwards) [14] in Charles Sturt University (Australia), with the Universities of Gotheborg, Stockholm, Abo Akademy, Utrecht, Sheffield, and others. See also the E.U. funded research project: POSITIVITIES, led by the Foundation Fluir with the Public University of Navarra, the University of Aarhus, and the University Degli Studi di Milano.

## References

- ASOREY, J. 2011. *Da flor a mesa: historia dunha pinga da mel*. La Coruña: Autor-Editor.
- BASCOMPTE, J. 2010. Structure and dynamics of ecological networks. *Science*, 329 (5993), 765-766.
- BRONFENBRENNER, U. 1987: *La ecología del desarrollo humano*. (Ecology of human development). Barcelona: Paidós.
- BRUNNER, J. *Realidad mental y mundos posibles*. (Mental reality and posible worlds). Barcelona: Gedisa, 1999.
- CAPRA, F. *Speaking nature's language. Principles for sustainability*. In: M.K. STONE, Z. BARLOW. (Eds.); *Ecological literacy: Educating our children for sustainable world*. San Francisco: Sierra Club Book., 1995. p. 18-29.
- CUMMINS, J. *Language, Power and Pedagogy: bilingual children in the cross-fire*. Clevedon: Multilingual Matters, 2000.
- CUMMINS, J. *Negotiating identities: education for empowerment in a diverse society*. Los Angeles. California Association for Bilingual Education, 2001.
- EDWARDS-GROVES, C. et al. *Relational Architectures: Recovering solidarity and agency as living practices in education*. In *Pedagogy, Culture and Society*, v. 18, n. 1, p. 43-54, 2010.
- FANG HE, M.; CHANG E.; PHILLION J.A. *Language, Culture, identity and Power*. In: HUBER – WARRING, T. *Growing a source for social change*, North Carolina, Information Age Publishing, 2008. p. 119-144.
- FOUCAULT, M. *Archeology of knowledge*. New York: Pantheon Books, 1972.
- KEMMIS, S. *Curriculum: contestation and change: essays on education*. Deakin University. Papers. Victoria (Australia), 1990.
- KEMMIS, S.; GROOTENBOER P. *Situating practice in praxis: Practice architectures and the cultural, social and material conditions for practice*. In : KEMMIS, S.; SMITH, T. (Eds), 2008.
- KEMMIS, S.; SMITH T. (Eds.) *Enabling praxis: Challenge for Education*. Rotterdam: Sense Publishers, 2008.
- KEMMIS, S. *Ecologies of Practices: an introduction*. Charles Sturt University. Unpublished paper. Wagga Wagga (Australia), 2009.
- KEMMIS, S., et al. 2009. *Situating practice in praxis. Practice architectures and the cultural, social, and material conditions for practice*. In: SYMPOSIUM ECOLOGIES OF PRACTICE, 2009. Australian Association for Research in Education. Canberra (29-XI – 3-XII / EWIL091156).
- KEMMIS, S.; MUTTON R. *Education for sustainability (EFS): Practice and Practice architectures*". Charles Sturt University. Unpublished paper. Wagga Wagga (Australia), 2009.
- LANDESBURG, E.; KRUGER D.; NEL N. *Addressing barriers to learning. A South African Perspective*. Pretoria: Van Schaik, 2005.
- MILLER, K. *Biologia*. Massachusetts: Prentice Hall, 2004, p. 72. ISBN 0-13-115538-5.

MUSSEN, E. Honey bee immunity to infection. The Bee Line, newsletter of the Oregon State Beekeepers' Association, 2008a.

MUSSEN, E. Beekeeping (Chapter in Small Farm Handbook). UC ANR Publication, 2008b.

NICOLAU A.; MOTA M.; LIMA N.. 2006. Physiological responses of *Tetrahymena pyriformis* to copper, zinc, cycloheximide and Triton X-100. *FEMS Microbiology Ecology*, v. 30, n. 3, p. 209–216, 2006.

POLIDORI, C.; BORRUSO L. Socially peaceful: foragers of the eusocial bee *Lasioglossum malachurum* are not aggressive against non-nestmates in circle-tube arenas. In *Acta Ethologica*, v. 15, n. 1, p. 15-23, 2011.

SCHATZKI, T. R. The site of the social: A philosophical account of the constitution of social life and change. University Park, PA: The Pennsylvania State University Press, 2002.

TYLER, M. JR. Ciencia ambiental: Desarrollo sostenible. Un enfoque integral. Cengage Learning Latin America: Santa Fé, Mexico: Thomson, 2007.

ZUFIAURRE, B. 2006. Social inclusion and multicultural perspectives in Spain. Three cases studies in Northern Spain". In: *Race, Ethnicity and Education*, v. 9, n. 4, p. 409-424, 2006.

ZUFIAURRE, B.; PEÑALVA A. Globalization and Glocalization in Northern Spain: Urban education, Ethnicity and Multicultural Issues. In: PINK, W.T, NOBLIT, G.W. Eds. *International Handbook of urban education*. Dordrecht: Springer, 2007, p. 413-430.

ZUFIAURRE, B. 2008. How to organise knowledge to reculture education and schooling. Reflecting on Social Studies, not History, to open a discussion. In BERGER M.J.; FORGETTE, R.: *Issues of diversity, inclusion and beliefs*. University of Ottawa: Editions La Perichole. Ontario (CA), 2008, p. 51-74.

ZUFIAURRE, B.; BELLETICH, O. 2009. What can we learn from comparative education: Great Britain, Spain and Perú: Three territories to characterize contemporary developments in education and schooling. *PAIDEIA*. University Concepción (Chile), 2009, v. 47, p. 139-160.

ZUFIAURRE, B.; HAMILTON D. *Cerrando círculos en educación: Pasado y futuro de la escolarización*. Madrid. Morata, 2014.