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ENVIRONMENTAL EDUCATION: EDUCATION FOR TRANSITION TO SUSTAINABLE DEVELOPMENT

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Abstract: It is general accepted that the principles of sustainable development can't be reached without education, public awareness and training. In this regard, the present paper presents rationales and approaches in Environmental Education, as well as the importance of institutional and curricular aspects in implementing this type of education.

Key words: Environmental Education, institutional and curricular aspects.

Rationales and educational approaches

While civilization is being maintained through institutions, it is kept alive and growing through education. As the current unsustainability of humanity resides the **inharmonious (conflicting) relationship between nature and human society**, we need environmental education. Therefore we need a coherent program to **train environmental educators**.

Chapter 36 of Agenda 21 calls each nation to bring together experts from various disciplines to prepare a national strategy for environmental education (EE) and training [33, 28, 17].

Lucas [16, 7] identified three meanings/facets of environmental education:

1. **education *about* the environment** (concerned with *cognitive understanding* of environmental issues);
2. **education *for* the environment** (concerned with *environmental protection* via particular purposes and aims);
3. **education *in* the environment** (concerned with *environmental experience* as educational mean outside the classroom).

In EE institutions, the organisational strategy and the curricular strategy should be complementary. The first has a greater effect on **values**, attitudes and behaviour, whereas the second influence more the conceptual/knowledge understanding. EE is not effective if the organisational strategy contradicts the curricula [30]. For example, an **Integrated**

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Action Model [7] can be used to identify motivational profile of students (this also includes age categories). These can be used together with social and situational conditions to design adapted curricula for different categories of students (target groups). However, such precision must not be applied at the expense of community-based cooperation in EE, but in the same time with it (and integrating it).

There are four possible target groups in Environmental Education, as related to their personality:

1. ***The Technical Group*** needs to know how to gauge environmental parameters;
2. ***The Subject Specialist Group*** needs to understand environmental systems;
3. ***The Management Group*** requires skills and abilities to resolve complex environmental problems;
4. ***The Lay Group*** needs to have attitudes, philosophies and values about the environment.

The old-fashion one-direction model of teaching is already outdated (though it resists in many countries). The teacher must accept that, in the Internet era, he cannot hold control of the learning as in former times (when he was the one possessing information).

On the contrary, the teacher must extend teaching beyond the walls of the classrooms, and capture students' attention in more subtle ways, on the basis of reciprocal respect of the other and of the common values.

This is of course not to say that the teacher-student relationship should be loose. The ***do-it-yourself learning*** (a lessez-faire approach) based on ***technology-in-the-classroom*** must be backed by reciprocal assuming of responsibility for the learning process. Otherwise, internet-chatting and other free-time activities will replace learning. Thus, internet in the classroom does not automatically bring educational progress [10]. An effective education approach is the two-ways, dialogical lesson.

This dialogue requirement holds also when ***environmental teaching kits*** are being used, eventually in combination with web-based and other methods and materials. As such kits tend to be more employed at lower ages [4], they could be employed more heavily in kindergartens and progressively be replaced at older school ages with web-based lessons of appropriate difficulty.

Given the ever changing and enlarging context of *the teacher-student relationship*, any curriculum must be rather elaborated for educating the teacher how to educate the student. Such ***"rehearsal curriculum"*** must be written in a way that motivates the teacher to learn and update and diversify its skills [11, 24].

Thus, in order to structure ***a problem-based EE***, various types of questions can be identified and labeled [6]:

- encyclopaedic,
- meaning-oriented,
- relational,
- value-oriented,
- solution-oriented

For example, web-based systems for environmental management [21, 29] can (and should) be introduced in classrooms with internet availability through questions and dialogue. There exist even international web-based, hands-on EE programs, e.g. Global Learning and Observations to Benefit the Environment – GLOBE is such a program which allows school children to be involved in a dynamic student-teacher-scientist partnership: they learn about the environment by taking carefully supervised scientific measurements of their natural surroundings (land cover, soil, hydrology, phenology, haze/aerosols, and atmosphere) and sharing information/data with scientists and other students in remote locations via Internet [34]. More, there have already been experimented **internet-based**, inter-institutional teaching systems, linking education institutions with with actors in the socio-economic environment (local authorties, companies, etc). In sucha case has a profoundly applied character, because it also includes the real world decision-taking processes [18]. The children's sense of participation and discovery is the best medium for EE and for nurturing responsible attitudes towards the environment. We will come back to this aspect when addressing "community-based learning".

Institutional aspects

We should no be left with the impression that there are no limits to this approach. For example, the idea of **green schools** looks shiny, but is dangerous. The big risk is that creating a new category of school out of the mainstream education will ascribe to EE a marginal importance in the collective perception of the citizens. In fact, EE is still largely without focus and side-lined [13, 27, 5]. I mean we must learn from the mistakes of politicization of the environmental issues, and not confound environmental education with political activism [8]. Thus the greens insist on the fact that only a green party can do the necessary change for environmental protection. While it is true that politic efforts must be focused, the focus should be on problems, not on political activism, and solutions must be found **within mainstream** politics: main parties, main governments. EE (and EE curricula) must be present at the core educational programs, not mere a specific but marginal one.

Such marginalizing risks exist with green schools, despite being a great concept. Surely, sustainability and earth conservation is an emergency, and we want to achieve and see fast progresses toward sustainability. However, short-term fast progresses are all too often false progresses, and a pathway to profound deceit (they are a dead-end road). The idea that all schools will follow the example of the green schools and turn green themselves is rather wishful thinking. Undoubtedly, the fact that green schools exist is a working idea is good think, itself a sign of a healthy democratic, diverse society. The fact that green school can exist is a victory for sustainability. But if green curriculum can only be implemented as segregated from the regular school, in green school and the like, this is no victory, but a defeat.

Curricular aspects

At present, EE is part of various disciplines/curricula. Our project is a way to synthesize and update EE methodologies and strategies in the partner institutions; hence it offers a model path for others. In addition, the project acts for the development and proposing of a common EE framework in the European Union. This work is therefore one of the ***international, real life efforts to implement sustainability.***

A common European Curriculum for training the trainers in Environmental Education cannot avoid overlapping some specialized programs and curricula. Our aim is not to propose some sort of imposition of a common European curriculum. Still, ***a European curriculum should exist, at least as an authoritative reference.***

The first obstacle to overcome is the fact that there is no unified theory or scientific body of knowledge regarding environmental knowledge. The same is true for the environmental education itself. In fact even local/institutional knowledge is both largely contingent and not monolithic [22]. But that's ok, this should be so. This variety of opinion may appear to hamper decision-making process.

The idea is to create the necessary conditions and working framework that allow professional and democratic involvement, which is the scope of what is known as the science of ***governance*** (not governing; governing pertains to governmental decisions, while governance pertains to multiplayer decision – governments, NGOs, scientists, and all stakeholders). For this, it is essential to establish the common grounds and the separate freedoms and responsibilities of each player. This is what we want to achieve with the current curriculum project.

The workshop (kick-off meeting) held between May 30 –June 01 in Iasi (Alexandru Ioan Cuza University), with the participation of all partners within the Leonardo da Vinci project RO/05/B/P/PP175010, allowed intensive discussions on the background of EE. The debates allowed reaching the common position that an environmental education (EE) curriculum must include the following character features:

- interdisciplinary and holistic [1, 31],
- value- and fairness driven,
- critical thinking and problem solving orientation,
- participatory,
- applicable in real-life and local contexts,
- favouring creativity,
- acceptance of change.

The last point is particularly relevant because it is a condition for necessary reforms in Central Eastern European member countries of the European Union, but also in older members.

A two-step education project at Purdue University in the US, a ***"dual-level professional development model for changing teacher practice"*** where Level I participants were trained by University staff and trained at their turn their colleagues - Level II participants) similar to our educating-educators project showed high effectiveness in changing classroom practice (83% in Level I participants and 68 % in Level II

participants). Hands-on approaches were the most effective [26]. While these results suggests that peer-education can be employed as highly effective (68%), they also hint to a more effective education of educators through direct contact with University staff, probably because the later (besides being higher qualified; but being also research professionals) have a deeper hands-on experience.

For instance, writing is an integral part of the Environmental Education research [15]. Therefore, innovative methods in the formation of EE teachers should include writing EE texts: conducting literature reviews, interviewing decision-makers and scientists, as well as synthesizing and documenting management problems (with related science and other issues that might constrain or drive the solution (legislation, social pressures, politics, personalities, etc) [3]. This should also include in every EE institution writing and periodically updating a document describing the organizational strategy of "greening" the EE institution. EE educators should acquire basic training and some working knowledge on what it means to green a Centre; plus related documents / working knowledge on environmental issues, environmental management, alternative systems, etc. This document should explain how the centres work (decision-making bodies, budgets, etc). It is recommended that "greening" mechanisms be professional, transparent and democratic (democratic does not signify lack of hierarchical responsibilities) [30].

A diversity of approaches is needed – there is no single general valid method [25]. While EE methods are already very diverse, ***the EE outcomes in schools*** can be understood as both:

1. ***well-established evidence*** (EE outcomes: students' environmental knowledge, attitudes and behaviour) and
2. ***emerging evidence*** (EE processes: students' perceptions of nature, experience of learning and influence on adults).

While later aspects have received less attention from researchers than the former, they disserve more dedication: as EE is not once and for all (but a life-long process), understanding EE processes insures better adaptability to new concerns and foci in time. Currently, there is a need to restore equilibrium in this sense [23].

Having in mind the importance of community involvement in governance and sustainable development, an interesting approach in EE is that of ***community-based schools***, where parents and other community members are actively taking part in school-based EE curriculum and various indoor and outdoor EE activities [32]. Some authors even talk of a "school-family-community ecosystem" as approach in environmental education [2]. Local environmental knowledge is also influenced by active participation in land use practices and outdoor recreation [19]. This is valuable bottom-line experience. Learning about "places" associated with local cultures is a good way to do effective EE. This learning can be done via [20]:

- childhood experiences,
- learning from elders and family,
- action and observation,
- comparisons between places,
- via festivals and community events,
- external sources,

- seeing a place under different conditions (during summer, winter, conflict, drought, floods, etc,
- continuity in connection to a place.

For example, in schools that are closed to significant water bodies, EE can be done through water quality analyses, e.g. in the sea [12] or across watersheds [9].

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