Integrating academic education and community needs in environmental field - case studies analysis
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Abstract. The paper presents the similarities and differences between the educational approach performed by two actors in the field of environmental education: universities and non-governmental organizations. For universities case, the education approach is a three-step process implying a cognitive, a self-tooling and an customization phase which are based on the investigation of the community education needs and must be detected by means of targeted questionnaires which will allow customized course offer especially for life long education. For the NGOs case, it is considered that rising awareness process in environmental education may become more efficient if it is thought as a three-step process implying a cognitive, a creative and an active phase. The paper ideas are sustained by describing projects undertaken in Romania as well as their results performed both in universities and in local NGOs projects of reconstruction, conservation and environmental education.

Key Words: environmental education, academic education, NGO, community needs, awareness.

Introduction. In the environmental field the education process is more challenging, addressing directly both to industrial/economic sector and communities. The concept of community-based education is a dynamic model appropriate to environmental demands which responds to questions imposed by communities, allowing community groups to address their own agendas and shape their own future.

Community-based learning enriches course-work by encouraging students to apply the knowledge and analytic tools to the pressing issues that affect local communities. Working with faculty members, industrial decision makers, community leaders and technical experts, students may develop research projects, collect and analyze data, and share their results and conclusions with the organizations and agencies that need the information, as well as with their professors.

The purpose of community-based projects is to enhance the understanding of issues affecting the community and to develop, implement and evaluate, as appropriate, plans of action that will address those issues in ways that benefit the community. The findings tend nowadays not to be filed and kept away from the public eye, but to be rapidly revealed and turn into a useful plan in the benefit of community. The profile of the academic staff is transformed also: the “absent-minded character” who is concentrated exclusively upon its experiments and calculations and cannot be disturbed must change into a charismatic person, eager to share his experience, to explain the phenomena and to ask for action to community being in the same time researcher, teacher and activist.

In European Union countries the rapid changes in technologies require a quick adaptation of people to the findings from energy, transport and environment sectors as well as to the new challenges of the modern educational system. The human resources from energy-transport-environment engineering are confronted with the specific training needs, directly depending on the nowadays concerns: higher rate of pollution and diminishing of natural resources.

In Romania, specific training needs of the specialists from energy, transport and environment sectors are in connection with the relatively lower competences in using the
interactive learning and teamwork, with the lack of e-learning products as well as weak competences in interpersonal communication. It seems to be a difficult task, especially in contemporary Romania, to rise awareness on environmental protection; as Romania is still a country in transition, having the primary needs from Maslow pyramid of the common people still unsolved, the response to social needs, particularly to environmental matters, is relatively low. Also the R&D in environmental protection is a complex, difficult to govern, decentralized and distributed problem. The situation is obvious, there is no need to deeply analyze sustainable development indicators, there is a lack of environmental education simply proved by an overview of the country: cities, landscapes, historic and cultural monuments, flora and fauna. The environmental education is scarce and non-attractive, oriented mainly on restrictions.

On the path of changing things and attitudes towards environment, some community based projects can be helpful. Some features of Romanian environmental education are described further for two academic projects and three Non-Governmental Organization (NGO) projects.

**Academic approach - formal and efficient.** There are detailed two academic projects coordinated by “Transilvania” University, Brasov, Romania in the frame of Leonardo da Vinci program.

The first project, abbreviated COMPLETE, is entitled “New Strategies of Competence Acquisition for Lifelong Learning in Energy - Transport - Environment Engineering” and is focused on “developing new strategies for increasing the trainers’ lifelong teaching and learning competences by using interactive methods and modern training programs in energy – transport - environment engineering” (COMPLETE). The academic structure allowed to organize interactive modules such as “Techniques of communication”, “Problem-based learning method (PbL)”, taught to target groups (teachers, students, energy and environment company responsible) using also the specific web site & e-learning platform facilities. As main project results it is worthy to mention upgrading of competences in energy – transport - environment engineering, e-products (interactive courses posted on platform), demonstrative projects, didactical software, a Lifelong Learning Center and transnational network in Energy – Transport - Environment Engineering (ETEE). The partnership had an European dimension with partners from France, Belgium, Italy, Portugal and Romania.

The second project, abbreviated A LA CARTE, is entitled “Customized Training in Thermal and Hydraulic Energy Management for Companies’ Needs”, which was targeted on continual vocational training of technical staff, both mid-aged and young graduate professionals, working or requiring knowledge in energy management, from the companies or public institutions (A LA CARTE). The most sensible sectors are thermal and hydraulic applications, as well as energy use in transport. The vocational training was developed by a team of academic staff from “Transilvania” University of Brasov and from “Ovidius” University Constanta, Romania who prepared a customized training in energy management according to declared interest of the companies. The training need analysis was performed with the collaboration of Brasov Chamber of Commerce and Industry by means of questionnaire. The competence for this continuous professional training was transferred from the EU host organization Research and Technology Association in the frame of University of Zwickau Germany who already got experience in a similar project “Intensive courses for engineers”.

Summing up the two academic case studies, there is a conclusion to be drawn: academic approach stands for formal education with a three-phase process: cognitive, self-tooling and customized, as shown in Table 1.
Three phase process in formal education

<table>
<thead>
<tr>
<th>Process</th>
<th>COMPLETE</th>
<th>A LA CARTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>- Project presentation; - Involvement of project managers and teachers; - E-courses in ETEE fields</td>
<td>- Project presentation; - Involvement of project participants; - New and efficient educational approach presented by host companies</td>
</tr>
<tr>
<td>Self –tooling</td>
<td>- Problem based learning; - Project based learning; - E-platform tools (forum, chat, wiki, e-mail)</td>
<td>- Survey techniques; - Questionnaire techniques; - Training need analysis</td>
</tr>
<tr>
<td>Customization</td>
<td>- Educational training programs customized for initial education and lifelong education</td>
<td>- Educational training programs customized for client demand</td>
</tr>
</tbody>
</table>

**NGO approach - informal and rising awareness.** The success in environmental education depends mainly on educator skills on transposing a theoretical matter (species extinction, air pollution impact on monument degradation, greenhouse effect) in a practical one. The basic idea is to make people see that the theoretical problem, seldom presented as “other people” problem, is very close to them, affecting their living environment; by demonstrating that the problem is in a their certain extent, an increased awareness is reached, implying individual, active participation.

There were three projects managed by local environmental non-governmental organizations (ECOPLUS, IPIMEA and CPNT) from Brasov on three subjects: the Rope Street – an old and decayed street from medieval city (ROPESTREET), the Tampa Mountain (the mountain around which Brasov city is laid) (TAMPA), and limitation of local traffic demand through a project called “For a cleaner atmosphere” (CLEANAIR).

The Rope Street project intended to involve the local community in the restoration of a medieval street known as the narrowest street in Europe, from the medieval Brasov which was in an advanced state of degradation. Among project results there were street restoration in the same architectural medieval style (wall and floor repair, artistic lighting and visible marking) as well as raising the public awareness on the cultural inheritance which must be preserved and passed unaltered to next generations.

The Tampa Mountain project intended to aware the public concerning the biodiversity protection in Tampa Natural Reservation (endangered species, relics from the post-glacial period, such as Draccocephalum austriacum, Delphinium fissum, Fritillaria orientalis, Hyacinthella leucophaea, Pulsatilla montana, Stipa pulcherrima, Hepatica transsylvanica by means of a limitation of the anthropic impact upon the fauna and the flora and to promote an ecological tourism by collecting the domestic waste and the non-biodegradable residues.

The project “For a cleaner atmosphere” meant to limit local traffic demand and also the associated urban air pollution. The project goal was to rise awareness of the general public, especially of the young generation, on the need of air pollution abatement. There is an important pollution source which may be influenced by common people, which is their transport means option. Decision on transport means must be made being informed on environmental and pollution implications of every transport means. There are also some indirect effects of high traffic flow on urban land use due to excessive parking space. The project aimed to educate and inform the Brasov city inhabitants on air pollution abatement by means of limiting passenger transport which produces high level of air pollutants. The target group consists of two concentric groups, the larger group of Brasov inhabitants and the smaller group of young people sensitive to project activities. Expected changes were changes in attitude meaning that we must convince the population that there is a „little“ pollution reduction which depends on ourselves and we must do it. The changes may be seen on medium and long terms and they are correlated with environmental education success.
An important educational aspect is to give to the education target group the opportunity to show that they care for and then to invite them to have a “proper opinion”, a vision on the environmental problem. For the case studies, “the proper opinion” was expressed in a creative manner. The environmental education may become more efficient if it is thought as a three-step process implying a cognitive, a creative and an active phase, as illustrated in Figure 1.

![Figure 1. The environmental education process.](image-url)

The theoretical aforementioned elements described as education phases can be easily transposed in real condition of case studies, as shown in Table 2.

<table>
<thead>
<tr>
<th>Process</th>
<th>Rope Street</th>
<th>Tampa Mountain</th>
<th>For a cleaner atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>Project presentation; Involvement of project managers and teachers</td>
<td>Project presentation; Selection of responsive group from schools</td>
<td>Secondary school contest; Newspaper articles; Information materials for polluter groups</td>
</tr>
<tr>
<td>Creative</td>
<td>Literary contest and essays; Rope Street Stories; Artistic contests paintings and modeling; Medieval Knight Circle</td>
<td>Contest on Environmental knowledge on Tampa as Natural Protected Area; Literary contest- Tampa legends; Contest on tourist banners and photos</td>
<td>Elementary schools contest; Design; Photography exhibition</td>
</tr>
<tr>
<td>Active</td>
<td>Participation to Rope Street days; Restoration of Rope Street; Preparation for next Rope Street Day</td>
<td>Participation to waste collection from Tampa Mountain; Participation to restoration of tourist marks</td>
<td>Participation to “Pedestrian Day”; Interaction with local authorities and citizens</td>
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</table>

In the *cognitive phase* the pupils, the basic target group, were asked if they are familiar with the two local areas (Rope street and Tampa mountain) and how do they want them to look like. By questioning, the teachers helped pupils to identify the problems meaning that areas state were not in good condition. Then they were encouraged to see the places and to read more about them. In this way the pupils felt the areas very familiar, being parts of their proximate environment to which they must care for.
The *creative phase* consisted in a re-creation process in which the pupils were asked to represent in an artistic manner their vision on the subjects. The feedback was astonishing showing that pupils' answer is very imaginative either in words (legends and essays), colors (paintings), images (photos) or volumes (ceramic statues, miniatures, medieval costumes). The massive impact may be seen in Figure 2.

Figure 2. Paintings and ceramic work exposed on the Rope Street exhibition.
The paintings and essays were hanged on ropes on “Rope Street” on a temporary exhibition being visited by hundreds of pupils and parents, followed by a show in a medieval tower (the Weavers’ Bastion) (Figure 3).

![Figure 3. The show at Weavers’ Bastion.](image)

In Tampa project, the creative phase was represented by a contest on Tampa mountain (Figure 4). In “For a cleaner atmosphere” project, the creative phase was represented by a contest of the best logo, which is illustrated in Figure 5. The translation of the text of the logo is “What part do you chose? We have already chosen”.

![Figure 4. Snapshots from the contest Tampa Natural Protected Area – miniatures.](image)

The active phase of the projects consisted in participation to “Rope Street days” which became an yearly event, very appreciated by young generations, especially after the architectural restoration of the street (Figure 6).

For Tampa project, the active phase meant a regular waste collection of the mountain made by NGO volunteers and people receptive to environmental calls from Brasov area (Figure 7).
Figure 5. Project logo.

Figure 6. “Rope street day”-remake in the restored street.

Figure 7. Waste collection from Tampa mountain.
For the last project, the active phase was presented by the participation to the „Pedestrian Day“ when volunteers from IPIMEA and partner organizations (ECOPLUS, Natural Protection and Tourism Club – CPNT) talked to pedestrians and drivers giving them a leaflet and inviting them to give up for a day at the passenger car use (Figure 8).

![Pedestrian Day Snapshots](image)

**Figure 8. Snapshots from „Pedestrian day“.

Conclusions.** The educational methods performed by two actors in the field of environmental education - universities and non-governmental organizations are complementary, and sometimes the target groups are common.

The academic education is formal, compulsory and concentrated on designing new modern instruments such as interactive methods, e-platform, questionnaires. By implementing academic teaching projects, universities aim to involve not only in the primary education, but also in lifelong learning so its methods of evaluation of education demand must be flexible and based on “market survey”.

The NGO education is informal, voluntary and concentrated on rising awareness and active implication. Especially for young pupils the creative phase proved to be very useful for the „caring for“ feeling which is very important and motivating for implication in the active phase.

**References**

CLEANAIR, For a cleaner atmosphere, Project financed by Partnership Foundation Miercurea Ciuc, Romania, in the frame of “Environmental Partnership” program.


ROPE STREET, Revival of the Rope Street from Brasov, Project financed by Partnership Foundation Miercurea Ciuc, Romania, in the frame of “Living Heritage” program.

TAMPA, Tampa’s Flora and Gabonyi’s Steps, Project financed by Partnership Foundation Miercurea Ciuc, Romania, in the frame of “Environmental Partnership” program.

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