Education in Sustainable Development: the role of universities

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Abstract: Sustainable development has started to be considered a core of teaching programs within the modern university. The education process requires strong methodological support and international cooperation. Current movement from environmental education to education for sustainable development are analyzed in the framework of European Strategy on Education for Sustainable Development. The specific role of university education, steps for implementation and current achievements are discussed. In this context, Ukrainian experience in terms of new courses in sustainable development, class-books and research opportunities are presented.

Keywords: Environmental Education, Education for Sustainable Development (ESD), European Strategy on ESD Ukrainian Experience, Role of University.

1. Introduction

In the 20th century, economic growth has resulted in substantial improvements in health, education, and the quality of life for many people. However, such growth has also caused significant deterioration of the environment. Negative impacts include (1) destruction of natural ecosystems at an alarming rate resulting in considerable losses in biodiversity, (2) tremendous increases in soil, air and water contamination, (3) accumulation of sizeable amounts of waste in the environment that neither can be assimilated by the biosphere nor managed by humans effectively, (4) global climate changes, and (5) extensive land degradation, including catastrophic deforestation (Miller and Tyler, 1994: 235). Impacts of economic activities have also caused disruptions in natural cycles managing nitrogen and phosphorous and increased food contamination by toxic elements, radionuclides and pathogens. Increased energy demands have
accelerated the depletion of non-renewable resources, such as gas, oil, and coal (Melnychuk et al., 2003: 20; Carson, 1962: 25). Within the last 80 years the population has increased three fold and will grow by approximately 3.7 billion people in the next 30 years. It is estimated that 90 percent of the additional people will live in poor countries. During the same period, energy consumption is projected to triple, while food consumption is anticipated to double (Cunningham, 1996:329). As a result of these projected changes, food security and energy safety will become core issues in determining the extent of human development.

Efforts to feed the increasing population have resulted in desertification in many parts of the world. The process of desertification typically leads to increases in soil erosion and salinity and reduction of natural vegetation. Problems resulting from economic growth and population increases are global and require the immediate response of stakeholders groups including governmental officials, politicians, environmental workers, members of non-governmental organizations, educators, and researchers. Because university professors, teachers and researchers are involved closely in the formation of attitudes of the next generation toward the environment, education has a significant role in addressing the impacts of economic growth, population expansion and nature preservation (Jenkins, 2003: 435-443). These attitudes will influence the choices of the next generation in dealing with future world development.

2. Education for Sustainable Development as a response to environmental challenges

Overcoming the global ecological and social crisis requires a new ideology of life and modern innovative approaches to education leading to a new cultural and ecological world outlook. Sustainable developments’ imperative should become paramount in training students and specialists, particularly those specialized in the field of political science, economy, environment and agriculture. This is the only way to reduce the harmful influence of society on the environment and to protect and preserve a biosphere for future generations. Efforts to gain individual profits at any price should become a thing of the past. As noted, a key issue in creating this new ideology is strengthening the role of education and education for sustainable development in particular with using a multidisciplinary approach (Pidlisnyuk et al., 2005: 46; Kasimov et al., 2002: 149-157). The crucial importance of a strong educational component for
global development was stressed at the 1992 World Summit in Rio de Janeiro, Brazil. Chapter 36 of Agenda 21 states, “Education, including formal education, public awareness and training should be reorganized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues (Melnychuk et al., 2003:32).” Education is an instrument for training human resources to optimize productivity by encouraging technical progress and by promoting cultural conditions conducive to social and economic change. The objective is to use all forms of capital, including the human one, to achieve rapid, more equitable economic growth with elimination and avoiding the impact to the environment (Kasimov et al., 2003: 15-32). The Dakar Framework for Action proclaimed that “education is a fundamental human right. It is the key to Sustainable Development … for effective participation in the societies and economies of the 21st century, which are affected by rapid globalization (UNESCO, 2000: 228).” At the final Agreement of 2002nd World Summit on Sustainable Development in Johannesburg, South Africa it was stressed that “the achievement of the internationally agreed development goals, including those contained in the Millennium Declaration will require a significant increases in the flow of financial resources to education and awareness raising” and to “integrate sustainable development into education systems at all levels of education in order to promote education as a key agent for change (UN, 2002:152).” The Aarhus Convention on the Right to Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental matters, with its rights-based approach to learning for sustainability can be seen as another important step toward changing in educational process (Pidlisnyuk , 2002: 27).

Recognizing the crucial role of education, a UN’s Decade on Education for Sustainable Development (ESD) has been globally announced for the period 2005-2014. The Decade aims to see ESD implemented in thousands of local situations on the ground, involving its integration into a multitude of different learning situations. These initiatives can be catalysts for action and contribute to the goals and objectives of the Decade. In such ways, organizations, local communities and individuals, different educational units can be actors within the global movement toward sustainable development.
3. European Concept of Education for Sustainable Development

In Europe the progress of Education for Sustainable Development received particular attention at the 5th Pan-Ministerial Conference "Environment for Europe" which was held in Kyiv, Ukraine in 2003. Among other major European environmental issues, the importance of environmental education and education for sustainable development was stressed. It should penetrate educational systems and spheres at all levels - from elementary education to the retraining of experts and decision-makers. The Kyiv Conference also called for the development and delivery of an ESD strategy (UNECE, 2003: 77).

Both education and sustainable development are complex issues. Therefore, it was crucially important to develop the Strategy on ESD through a participatory process involving governments, international leading organizations, public experts, NGOs and other stakeholders from the environment and education fields. Noting the political, economic and social diversity existing in the region, the text of the Strategy had to be made flexible enough, so that its implementation could be adapted to each country’s priorities, specific needs and national features. Taking these circumstances into account, a draft Strategy on ESD was elaborated by international group of experts in 2002-2003 under the leadership of UN Economic Commission for Europe and in years 2002-2004 broadly discussed within the European region at the number of meetings. In 2005 in Vilnius (Lithuania) Ministers and other officials from European Educational and Environmental Ministries adopted the Strategy on ESD at their joint meeting. Various stakeholders, including international organisations, business, non-governmental organisations, regional environmental centres and research institutions took part in the meeting and provided valuable contributions. The meeting also launched the United Nations Decade for Education for Sustainable Development in the region.(UN, 2005:178-190).

The objective of the EU Strategy is to incorporate key themes of sustainable development in all education systems (UNECE, 2005: 27). These themes include a wide range of issues: poverty alleviation, peace, ethics, democracy, justice, security, human rights, health, social equity, cultural diversity, economy, environmental protection, natural resource management. The next milestone in the process is the implementation of the EU Strategy. Countries agreed to develop indicators to assess the implementation, organize thematic and sub-regional workshops and compile good practices in education for sustainable development. The Strategy also calls for
the transition from professional environmental training to an economically and socially focused model of education based on wide interdisciplinary knowledge and a complex approach to the development of society, economy and environment. At the further Pan-European Ministerial meeting “Environment for Europe” in 2005 in Bratislava (Slovakia), the Strategy on ESD received a further practical development. At the latest meeting held in the fall 2007 in Belgrade, Serbia the first progress achieved in first phase of the Strategy’s implementation was reported by countries. It was established that further Strategy implementation should focus on strengthening of the initial measures and on the development of competences, ESD content and teaching tools and materials. A more integrative conceptualization of ESD was needed to better integrate all other components of SD with the environmental one, which was the focus of Environmental Education. This key objective would only be achieved with the promotion of stronger partnerships through multi-stakeholder cooperation between education on the one hand, and environmental sectors on the other. One of the priority activities for countries in their further activities should be the development and start of implementation of the national plans. ESD should be promoted through capacity building, the dissemination of good practices and the exchange of positive experiences. Implementation should be needs-driven and respond to country-specific challenges and common interests identified by groups of countries formed sub-region. Partnerships with the private sector, in particular with the local businesses, should be further enhanced and encouraged in promoting ESD. Stronger links with economic issues, including through exploring economic incentives and “greening” procurement, should be promoted. Raising awareness of the potential contribution of indigenous and other traditional and local knowledge with respect to moving towards a more sustainable world should be given attention (Kasimov et al, 2003:15-32).

4. From environmental education to education for sustainable development

Environmental education gained substantial international attention in final decade of 20\textsuperscript{th} century. Together with tremendous transformation from the early association with “nature study” and “conservation” to multidisciplinary knowledge it united sustainable development, ecological and environmental literacy, globalization and socio-political aspects (Jenkins, 2003: 437-443).
Environmental education looks mostly as a complex system of scientific, technological and practical knowledge from different disciples, which accommodates political, socioeconomic, historical and cultural issues.

The term "environmental education" sustains multiple meanings and rationales very different curriculum practices. To the extent that environmental education may engage with socio-political activism it challenges the purposes of schooling that traditionally use the acquisition and transmission of knowledge. Environmental problems could not be separated from their wider personal, social and political dimensions while teaching the environmentally sound subjects. All mentioned circumstances point towards the need for diversity, local sensitivity and experimentation in programs of environmental education.

There is an obvious interrelation between education in general, environmental education and education for sustainable development. It is evident that any true education, by definition, works to the benefit of sustainable development. However, it is also important that the introduction of ESD provides a unique opportunity for reviewing and strengthening education as a whole, especially in former Soviet Union countries. This realization provides an opportunity to incorporate ESD into modern training; a chance to re-integrate the post-Soviet educational space; a chance to restore the traditional values of education as part of our culture and at the same time to introduce the most recent innovations in this sphere (Kasimov et al., 2003:437-443).

However, at the same time, the level of environmental, cultural and social responsibility of the population to the challenges arising is far behind the present-day knowledge and interests. To overcome this gap it is essential to update the existing education system and develop new education programs in the field of sustainable development. Given that the achievement of sustainable development is an integrated natural, social and economic target, ESD should also integrate natural, social and economic knowledge. In accordance with the goals of sustainable development, the content of ESD also has three parts (Kasimov et al., 2003:437-443):

- environmental - protection of the integrity of ecosystems, the carrying capacity of the biosphere, biological diversity, and the quality of the environment;
- economic - providing the imperative of sustainable development for economic management (efficient use of natural resources, strategic sustainable management of territories, resources and economic sectors);
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- social - education in the sphere of human rights, health, safety, conflict resolution, ethnology, anthropology).

Education for Sustainable development is guided by the principle of equilibrium and the principle of precautionary action. The first principle provides for the use of natural resources at global and local scales without losses of biological diversity while creating conditions for their renewability. The principle of precautionary action provides that when an activity increases the threat of harm to human health or the environment, precautionary measures should be taken, even if scientific uncertainties still exist in some cause and effect relationships. This new educational approach has to be so effective that the principles of sustainable development become an integral part of every person’s life. Traditionally four main instruments are recognized for implementation of ESD (Pidlisnyuk et al., 2005: 58):

- dialog: creating understanding and constant dialog between authority, business organizations, other important stakeholders groups;
- education: development and creation of new knowledge, skills and habits for encouraging sustainability practice in business, economy, each-day life;
- information: providing the public with broad access to information about varieties of questions regarding SD, state of the environment along with information about achievements in the a way to sustainability;
- marketing: changing of human behavior supporting sustainable development decisions, having all knowledge and data.

From another perspective, effective education for Sustainable Development depends upon a combination of the following factors: legitimacy through the curriculum; new ways of learning; competence of staff; institutional development; partnerships and finances.

In order for universities to play an important role in promotion and implementation of ESD, the following steps have to be taken:

- carrying out a general university reform. This goal embraces the following five main issues: incorporation of sustainable development aspects into existed university courses and research, their reorientation towards sustainability; creation of new courses oriented on different aspects of sustainable development; creation special Master’s and PhD programs in sustainable development; strengthening regional aspects in educational curricula and
their relation with sustainable development; initiating research in and education for sustainable development;

• changing management of universities toward sustainability;
• strengthening international cooperation and exchange.

In implementing this new focus, university professors have to move outside the traditional format of teaching through lectures and seminars. Strong scientific background has to be combined with presentations delivered from practitioners from business, producers as well as political and governmental leaders. The revised sustainability sound curricula have to balance the traditional scientific approach with input from case studies and social sciences, including elements of ethics and sociology. In training professionals, teachers and lectures have to raise ecological awareness, emphasize principles of sustainability and present good practices. Students should be encouraged to ask appropriate questions and trying to find an adequate answers rather than simply acquiring a body of knowledge. The goal should be to enable students to engage in an informal conversation and discussion with expertise about the different aspects of environment and sustainability and to help them to develop the confidence and skills to add to it and to challenge it, when appropriate (Gough and Scott, 2006: 273-290).

To achieve success in the incorporation of sustainable development principles into the education system, collaboration has to exist between educational and training systems, communities, other stakeholder groups, such as governmental officials, non-governmental organizations, and consumers. Another challenge is to make sustainability attractive not only to certain target educational groups, but to the society as a whole. In the global context, the problems posed by climate change is a leading example of where ESD could be applied to daily life, as climate change affects everyone and ESD offered an essential way to shape knowledge and attitudes, and hence could help us to address these problems.

5. Case-study from Ukraine

Over recent years the author has supervised and implemented several programs aimed to promote sustainable development for the Ukrainian public and to implement sustainability within the university system. Firstly, in years 2001-2002 together with colleagues from the Sustainable
Development and Ecological Education Center, a number of training programs were prepared and delivered to local governmental officials, public experts and NGOs leaders in some Ukrainian cities: Kyiv, Cherkassu, Kamenz-Podilsky. Two programs were successfully accomplished in cooperation with faculty from the Carl Vinson Institute of Government, the University of Georgia (USA). A text-book entitled “Sustainable Development: 25 questions and answers” was published in order to disseminate knowledge among broader Ukrainian auditory.

Secondly, in 2002 the author prepared a syllabus for a lecture course “Environmental aspects of Sustainable Development”, taught at the Master program in Ecology at the National Agricultural university during the years 2002-2005. It was the first official course in sustainable development at Ukrainian universities. Currently, this course is obligatory for all Master programs in Ecology in Ukraine. In 2005, a new syllabus for lecture course “Fundamentals of Sustainable Development” was prepared by author, and the subject was taught for the Master program in Economy at the National Agricultural University in 2005-2007. The same course was delivered at Lanchou Giaotong University (China), Kyiv State University (Ukraine) and ICN Business School (France). The syllabus includes the following topics: overview of sustainable development (SD), main terms and affiliations; ecological threats that stimulated SD; economic and social threats that stimulated SD; institutional support for SD; indicators of SD: global and local approaches sustainable agriculture; sustainable water use; education for sustainable development; local agenda 21: creation and implementation; the role of stakeholders groups in SD; case studies from Europe, USA and Ukraine.

For teaching these course two bench books were prepared together with co-authors. The first one entitled “Sustainable development: what everyone needs to know” (2003) was published in English, the other one entitled “Sustainable development and role of education” (2005) has been broadly used for courses in sustainable development at different Ukrainian universities. The first book was also used at Kansas State University for a Master program in Sustainability in Indigenous Study.

Different researches have started to research on in different aspects of sustainability as a consequence of the different initiatives taken: analysis of institutional support for SD in Europe and ways of using it in Ukraine; attitude of Ukrainians towards SD: the case of local and state governmental officials; attitude of Ukrainians towards SD: the case of educators and students; analysis of Water use in rural communities of Central Ukraine in terms of sustainability:
sustainable rural development in Central Ukraine and the role of extension service; sustainable Transport systems.

Finally, recognizing the important role of educators in implementation of sustainability, recently two trainings were accomplished in cooperation with the Sustainable Development and Ecological Education Center and National Agricultural university across Ukraine: the “Education for Sustainable Development” week for secondary schools teachers from Central Ukraine and the “University Program regarding Sustainable Development “ for faculty of Crimean Universities (South Ukraine).

6. Concluding remarks

It is truly evident that the sustainable development has become a core of teaching programs within the modern university’s education. At the same time universities need strong methodological support and good international communication in terms of research and development. From the governmental point of view the creation of a national strategy for ESD is among the major tasks for the years to come in many countries of East and Central Europe. In Ukrainian context, an important question is: "Is it possible to develop ESD in a country with a rather unstable economic situation”? The balanced sustainable development for country and the ensuring of sufficiently high quality of people’s life can be possible only through education which should acquire support at all levels, preserve its historic achievements and yet be permanently in a quest for progress. In relation to sustainability, this quest is urgent. Rapid and substantial changes have to be achieved in order to support education to play its crucial role in the development of more sustainable economic and social systems. The Ukrainian education system just only begins to address this task and there remains a lot to be done.

Literature

EDUCATION FOR SUSTAINABLE DEVELOPMENT


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**Edukacja na rzecz zrównoważonego rozwoju oraz rola uczelni wyższych**

**Streszczenie**

Zrównoważony rozwój można postrzegać jako trzon programów nauczania w procesie edukacyjnym współczesnych uczelni wyższych. Wymaga on jednak silnego wsparcia metodologicznego oraz współpracy międzynarodowej. Obecnie zauważać można przeniesienie akcentu z edukacji ekologicznej na edukację na rzecz zrównoważonego rozwoju, co stanowiło przedmiot analizy niniejszego artykułu w ramach Europejskiej Strategii Edukacji dla Zrównoważonego Rozwoju. Omówiono specyficzną rolę edukacji wyższej, poszczególne etapy implementacji, a także bieżące osiągnięcia. Zaprezentowano również doświadczenia ukraińskie z punktu widzenia nowych kursów zrównoważonego rozwoju, podręczników, a także możliwości badawczych.

**Słowa kluczowe:** edukacja ekologiczna, edukacja na rzecz zrównoważonego rozwoju, Europejska Strategia Edukacji dla Zrównoważonego Rozwoju, doświadczenia ukraińskie, rola uczelni wyższych.