

Review

Framework for sustainable development education and lessons learned

Santosh Kumar Mishra

Population Education Resource Centre (PERC), Department of Continuing and Adult Education and Extension Work, S. N. D. T. Women's University, Patkar Hall Building, First Floor, Room. No. 03, New Marine Lines, Mumbai - 400020, Maharashtra, India. E-mail: drskmishrain@yahoo.com. Tel: 91 022 22066892 (O), 09224380445 (M), 91 022 28090363 (R).

Accepted 31 October, 2012

Today, educators face a compelling responsibility to serve society by fostering the transformations needed to set the path to sustainable development. The time has come to ensure that the concepts of education for sustainability - *in the broadest sense* - are discussed and woven into a framework upon which current and future educational policy is based. Understanding the principles of sustainability and the interdependence of the environment, the economy, and social systems can help learn to make the changes necessary to become effective stewards of natural resources and the environment. Education for sustainability of which many other disciplines are indispensable components, will engage partners from all arenas - adult education, on-the-job training, other formal and non-formal education programs, and the media - to reach out to as many individuals as possible. Clearly, the time is right to engage in a dynamic process to educate not only children but all citizens about the economic and environmental realities of today's world. Individuals from business and government, the educational community, and non-governmental organizations (NGOs) need to come together to share common themes, ideas, and challenges related to education for sustainability. This paper aims to give an insight into the framework within which skills and education can be imparted for environment and sustainability. It also: (a) Looks into the significant lessons learnt in implementation of education for sustainable development programmes; and (b) Discusses role of students in sustainable development initiatives. The paper concludes that achieving a sustainable future will not happen unless the educational system imparts education for sustainable development to citizens and specialists who understand the interconnections among the environmental, economic and social disciplines.

Key words: Education, sustainability, skill, framework of action, community.

INTRODUCTION

Education is essential to sustainable development. Citizens of the world need to learn their way to sustainability. The current knowledge base does not contain the solutions to contemporary global environmental, societal and economic problems.

Today's education is, thus, crucial to the ability of present and future leaders and citizens to create solutions and find new paths to a better future. Education

for sustainable development (ESD) is not a particular programme or project, but is rather an umbrella for many forms of education that already exist, and new ones that remain to be created. The ESD promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies. The ESD affects all components of education including; (1) legislation, (2) policy, (3) finance,

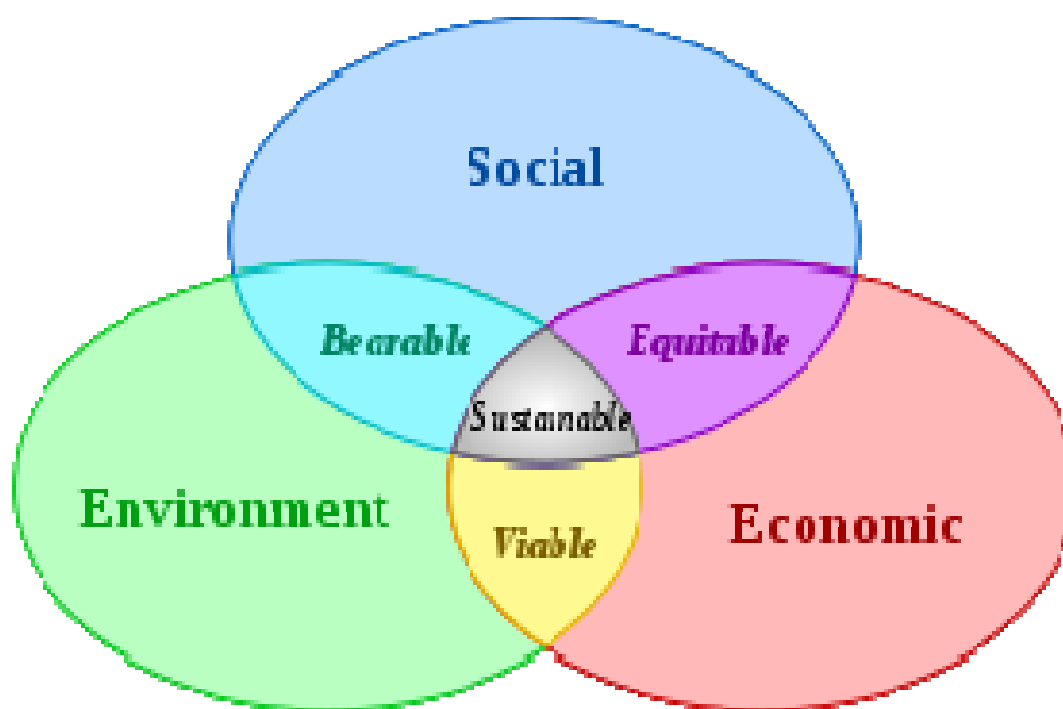


Figure 1. Sustainable development and its linkages with social, environmental and economic aspects.

(4) curriculum, (5) instruction, (6) learning, and (7) assessment etc.

The ESD calls for lifelong learning and recognizes the fact that the educational needs of people change over their lifetime. There are many programmes using an ESD approach to learning which is critical for achieving sustainability. Many individuals and organizations around the world already have implemented several ESD programmes through formal and non-formal channels of education Cohen (1995). Examples of such programmes include:

1. A teacher weaving sustainability themes into primary education using participatory methods;
2. A community development worker raising people's awareness on rights which are denied to them; or
3. A public health worker training people to draw water from clean sources.

This paper aims to give an insight into the framework within which skills and education can be imparted for environment and sustainability. It also:

1. Looks into the significant lessons learnt in implementation of education for sustainable development programmes, and
2. Discusses role of students in sustainable development initiatives.

DEFINING EDUCATION FOR SUSTAINABILITY

Education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions. These actions will help ensure an environmentally sound and economically prosperous future.

Sustainable development, as defined by the Brundtland commission in 1987, is "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". In a sustainable society, environmental protection and economic objectives belong to a common framework. In a sustainable world, environmental protection, economic objectives, and social justice should be linked in harmony. The conceptual framework of sustainable development and its linkages with various social, environmental and economic issues can be best understood from Figure 1.

Many educators are helping society achieve sustainability by teaching the three "e's" - *environment*, *economics*, and *equity* - along with the traditional three "r's" - *reading*, *writing*, and *arithmetic*. In so doing, they are fostering awareness of sustainability among; (1) Individuals, (2) communities, (3) Institutions, and (4) Governments.

In coming decades, education for sustainability has the potential to serve as a tool for building stronger bridges between; (1) the classroom and business, and (2) schools and communities.

The ESD framework has four major principles which include:

1. Promotion and improvement of high quality, relevant basic education;
2. The reorienting of existing education policies and programmes to address the social, environmental and economic knowledge, skills and values inherent to sustainability in a holistic and inter-disciplinary manner;
3. The development of public understanding and awareness of the principles; and
4. The development of specialized training programmes to ensure that all sectors of society have the skills necessary to perform their work in a sustainable manner.

DIMENSIONS OF SUSTAINABLE DEVELOPMENT

Sustainable development is an extension of socio-economic development, including the environmental dimension. Sustainability is the simultaneous fulfilment of the objectives in the three spheres that is, the preservation of ecological integrity, providing social welfare through economic development. These goals can only be achieved through an accurate management of the interfaces between the spheres. The keywords included in the intersections are to be understood as big management guidelines or criteria (Peter, 1994).

The concept of sustainable development is progressively recognised by national governments, policy makers and many parts of industry as an important strategy, comprising the following three inextricably linked spheres:

1. Environmental sustainability: The environment is mankind's life support system and includes everything that we rely upon for our existence. This includes air, metals, water, rock and other living organisms. Clearly, many of man's activities are not sustainable and work needs to be done to improve our relationship with the environment. Environmental sustainability includes these elements: (1) Climate change; (2) Air pollution; (3) Ozone depletion; (4) Oceans; (5) Freshwater; (6) Wildlife; (7) Soil; (8) Land use; (9) Waste; (10) Radioactivity; (11) Noise pollution, and (12) Light pollution.

Environmental sustainability rests on the rational use of resources, such as: (1) Fossil fuels; (2) Nuclear energy; (3) Agriculture; (4) Livestock; (5) Forestry; (6) Biodiversity; (7) Water; (8) Fisheries, and (9) Minerals.

2. Economic sustainability: Sustainable development encourages people to take a more long-term view of the economy. To make the economy sustainable, it has been argued that more needs to be done with less in terms of the rational use of resources: Investment needs to be

increased; stability promoted; the skills of the workplace need to be improved and workers empowered and rewarded. Within this element, there is considerable need for innovation, enabling products to compete on elements other than price. Economic sustainability includes these elements: (1) Energy; (2) Transport; (3) Waste; (4) Employment; (5) Investment, competition and stability; (6) Education and skills; (7) Business and industry; (8) Trade, and (9) Tourism.

3. Social sustainability: A strong, diverse and thriving social structure is a key element of sustainability. The goal with this element of sustainable development is a sense of social cohesion, cultural inclusion and people empowerment. This is achieved through making meaningful improvements to the places where people live and work, giving them the chance to play an effective part in shaping change for a preferable future. The key elements within the social sustainability pillar are: (1) Health; (2) Poverty; (3) Communities; (4) Housing; (5) Travel; (6) Crime; (7) Recreation; (8) Consumption; (9) Food safety, and (10) Stress.

SUSTAINABLE DEVELOPMENT AND ENVIRONMENT

Environment is not only a huge area, but also a huge ecosystem in which millions of creatures live in. Environment provides raw material for economy. This raw material gained through the production process turns out to be a consumption product. Then, these raw materials and the energy used in production return to the environment as pollution. Therefore, sustainability of environment is reasonably important in regards of economical development.

In relation to environment, the first comprehensive arrangements concerning international cooperation have been considered in the early 1970s (National Science and Technology Council, 1994). In 1972 in Stockholm "*United Nations Human Environment Declaration*" (Stockholm Declaration), the first global evaluation of many countries whose socio-economic structures and development levels differ from one another, was accepted. Sustainable development concept was first defined in 1987 with the Brundtland Report, prepared by World Commission on Environment and Development and since then began to be widely used.

One of the important developments which support the sustainable development vision has come into effect with the 1992 Rio Earth Summit. Rio Earth Summit, the largest meeting including 172 countries, was an important meeting in which the countries have approved of the economic and global issues to be achieved in accordance with the environmental values and sustainable development principles.

Some basic principles about the sustainable development which focus on the environmental dimensions are:

1. Humankind is on the centre of the sustainable development. She/he has the right to have a healthy and efficient life in accordance with nature.
2. On condition that they are not disturbing other countries' environment, all countries save the right to use their natural resources according to their own politics.
3. A development right which meets the current and forthcoming generations' is necessary so that environment and development should be acknowledged.
4. Environmental protection should be seen as a complementary part of development process.
5. In terms of ecosystem protection and development, countries shall cooperate in global association spirit. In environmental protection, countries have common but different levels of responsibility.
6. National authorities, in terms of "*the one who pollutes pays it*" principle, should make the environmental costs international and the use of economic devices improved.
7. As to activities, which have effects beyond borders, the activist country should inform the related countries in time and provide them with necessary information.

Briefly, the living environment provided by sustainable development means using of water resources so carefully that current and forthcoming generations can benefit adequately, keeping the weather clean in order to breath fresh air, making use of the benefaction of nature and living in good health 'today' and in the 'future'. The concept of sustainable development is an important milestone in environmental theory because it points how society itself should be organized. This ambitious interpretation is widely shared by business leaders, policy activists, and academics alike.

ACHIEVING SUSTAINABLE DEVELOPMENT THROUGH EDUCATIONAL APPROACH

Historically, various conferences and organizations have offered definitions of environmental education (Harold, 1992). Under some of these definitions, environmental education includes the economic, environmental, and social dimensions contained in the concept of education for sustainability.

As attention to the concept of sustainability escalates domestically and abroad, efforts must continue to bring all stakeholders together in its pursuit. The roles of citizens, communities, industry, and government in achieving the goals outlined in recent national reports on sustainability suggest that efforts should be increased to ensure that thoughtful and comprehensive planning is promoted by the formal and non-formal education community.

These efforts should focus attention on the delivery systems used to achieve these goals. If sustainability is to be achieved, educators should take a leadership role, breaking new ground to prepare society for an age of accelerating change in a world of:

1. Increasingly diverse and growing populations,
2. An expanding economy, and
3. Changing global environment.

PRESENT FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

There are various subject areas under sustainable development. These include:

1. Health issues and the well-being of people: Prevention and control of disease and injuries, as well as the long-term monitoring of the impact of pollution and climate change, are critical to human health and sustainable development.
2. Sustainable economic activities and increasing community prosperity: In order to be sustainable, communities must have an appropriate economic base to ensure their survival.
3. Education and cultural heritage: These are a fundamental prerequisite for sustainable development and capacity building.
4. Children and youth: Their well-being and potential are essential to the future of communities and must be protected and nurtured.
5. Management of natural, including living, resources: This must be based on sound science and traditional knowledge to maintain and develop local settlements.
6. Infrastructure development: This enhances economic growth and the quality of life of people.

COURSE FOR ACTION

Course of action will require the help of many disciplines focusing on the interconnections among the natural and built environment, and the economic and political forces that influence the world. These forces are fluid and subject to changing conditions. Sustainable development is, therefore, a process rather than a fixed goal. Vision of sustainability will develop and mature in the future as environmental, economic, and social forces undergo change. The principle that sustainability is a process will need to be reaffirmed continually as nations advance along the path to sustainability (William, 1969).

There is recognition that successful efforts for implementing education for sustainability depend on six core themes. Collectively, these themes outline a course of action to educate for sustainability. They are; (1) lifelong learning, (2) interdisciplinary approaches, (3) systems thinking, (4) partnerships, (5) multicultural perspectives, and (6) empowerment.

Lifelong learning

Education is a process that is - or should be – ongoing

throughout one's lifetime. As the Ontario Teachers Foundation has stated, learning is not "*a prerequisite to living but is its accompaniment*". Lifelong learning is the first major theme of the action. "*Lifelong learning*" refers to non-formal education that occurs after one's formal schooling has been completed. Learning is a process that occurs in non-formal and informal ways during an individual's lifetime. All forms of formal and non-formal education are part of the process of lifelong learning.

Interdisciplinary approaches

Education for sustainability requires an understanding of the interdependence and interconnections of humans and the environment. Its elements include:

1. Knowledge of global socio-geopolitical disciplines,
2. Biological and physical sciences, and
3. Human socio-economic systems.

For example, education for sustainability will prepare policymakers for merging economics and the natural sciences with other disciplines when developing environmental policy. Environmental issues traverse studies of the natural sciences (biology, earth sciences), social studies (economics, anthropology, geography, and history), and the humanities (philosophy, the arts, ethics, and literature). Many schools have begun integrating environmental examples into some of their coursework, thereby fostering enthusiasm for science and other disciplines (Abbey, 1995).

Ideally, disciplinary courses with social, economic, or environmental content should be accompanied by interdisciplinary subject matter on sustainability, which draws from a number of content disciplines. To the extent possible, educational curricula and pedagogy should reflect the interconnections among disciplines that are central to sustainable development. The benefit of this approach is that sustainability is an ideal organizing theme ideal for encouraging integrative thinking. Learning about sustainability necessitates breaking down the walls between disciplines, perhaps by focusing on a single real-world issue addressed from various perspectives. To support this kind of experience, existing education standards may need to be revisited to embrace the major elements of sustainability.

Whatever the approach, the process used and resources employed to integrate education for sustainability across the curriculum will remain a local issue to be addressed and continually assessed by communities, local and regional programs, and their respective stakeholders. Course materials with regionally specific, hands-on examples will have to be developed, and teachers will benefit from training and practical assistance.

Equally important, interdisciplinary approaches should

be encouraged as part of non-formal educational experiences. "*Non-formal education*" is used by educators to indicate those forms of learning acquired in informal contexts, such as the media, workplaces, and community activities. All learners - both children and adults - need to see the connections among discrete bits of knowledge gained on a daily basis if they are to respond to the challenges posed by a nation moving toward sustainability.

Systems thinking

Educators generally accept that the first goal of learning is to impart knowledge and the second is to teach skills such as problem solving, conflict resolution, consensus building, information management, interpersonal expression, and critical and creative thinking. Education encompassing the concepts of sustainability offers an exemplary vehicle for developing and exercising many of these skills which are increasingly being sought by employers. Increasingly, these are the skills that employers are seeking in a world of complex problems requiring integrative solutions.

As socio-economic problems and environmental issues become increasingly complex, advanced technologies can serve as a tool helping the human mind synthesize and integrate mountains of data. The importance of systems thinking cannot be ignored. Any concept - including sustainability - should be open to informed debate and sustainable development should not be taught as an ideology or as a goal, but rather as an ongoing process; not as a set of irrevocable answers, but as a way of continually asking better questions.

Partnerships

In addition to bridging disciplines, education for sustainability will mean reaching beyond schools to involve businesses and individuals with specialized expertise throughout the community. In the 21st century, learning about economic and social development as well as the built environment and natural resources will be the collective responsibility of public and private institutions, communities, businesses, and individual citizens worldwide. Partnerships among governments, educational institutions (from schools to community colleges and universities), industries, nongovernmental organizations, and community groups are increasingly important.

Increasingly, businesses require a workforce that is both environmentally literate and skilled in interdisciplinary systems approaches to solving problems. Businesses can support formal education by participating in class work as mentors, by offering internships, by providing employees with opportunities for advanced

training, and by employing business sites as classrooms. Most importantly, the business community and the education profession can engage in ongoing dialogue about common goals and how best to achieve them. National governments can support educational activities in the public and private sectors and build intergovernmental alliances to advance education and training by supporting educational activities. Educational institutions should seek ways to collaborate with nongovernmental organizations and industry to advance common objectives.

Multicultural perspectives

To be effective in reaching people across the country and around the world with a message that is relevant and meaningful, education for sustainability must encompass an appreciation of diverse cultural perspectives. This requires that the content of educational materials reflect divergent cultural approaches to sustainability. Educational materials and programs should be made accessible to all interested communities.

Furthermore, educational programs should be rooted in the actual experiences of people in their own communities. These programmes should not assume a common understanding of sustainability's political and social context. Finally, young people from diverse cultural backgrounds must be provided with the training and access necessary to pursue environmental and scientific careers.

Empowerment

Education is generally agreed to be the most effective way to impart knowledge and skills that can be applied outside the classroom in everyday life. The desired outcome is informed citizens who are prepared to participate responsibly in a sustainable society. Students can be empowered by giving their voice to new ideas and through action, such as voluntary community service, which is, itself an educational tool. Non-formal education programs also provide good opportunities for learners to act individually and collectively by providing the knowledge and skills necessary to evaluate and discuss complex issues. Education for sustainability can provide a vehicle for engendering responsible citizenship, utilizing a variety of instructional models and guidelines that have been long accepted in the field of education.

Sharing experiences about successful actions that are engendered by education for sustainability in its formal and non-formal modes will accelerate the transition to sustainability. Information about existing models of sustainability can be disseminated through the media, multimedia technologies, information clearinghouses, and other means, both nationally and internationally.

Sustainability at local level

The challenge of sustainability at local level emerged with a new dimension in 1992, in the Rio Summit, where local governments committed themselves towards sustainability. Among the key issues, one that assumed particular importance was the call to create opportunities for wide participation of local actors in the search of strategies and action to achieve sustainability. In Local Agenda 21 (LA21), public participation assumes a fundamental role.

It is well known fact that local participants are the ones with the best knowledge of how the local ecosystem and culture are connected together and how they work (Julian, 1995). Going further, and as the UN Commission argues, an effective citizen participation in decision making processes helps the promotion of the social and economic equity within among nations. This is a question often neglected that causes the inability to promote the common interest in sustainable development. So, there will be no sustainability without a greater potential for citizens to take control of their own lives, health and environment (<http://www.gcric.org/edu/pcsd/chap1.html>, Accessed on December 10, 2011).

In several countries, it is primordial to find new forms of public participation that promote the effective involvement of the population and create partnership opportunities among stakeholders to achieve common solutions and assure its implementation. However, this cannot be done always in the same way. It is necessary to adapt the participation methods to the population in question, and to its social, economic, cultural and environmental characteristics (Jayne, 1995).

ECO-SCHOOL PROJECT

This project is an international project carried out with the cooperation of 14 countries. Eco-Schools Project is a programme carried out to teach in schools about environmental awareness, environment management and sustainable development education (Figure 2). With participant approach, students in schools get both information about environmental issues and have an effective role in making their families, local administrations and civil society organizations aware of the environmental issues (Rosalyn, 1995).

Students, in order to help carry out sustainable development process at local level have an effective role in decreasing the environmental effects of school (Commission of Global Governance, 1995). Therefore, eco-schools, going beyond the teacher in class, contribute to provide environmental awareness in other parts of the society. Study is launched with one of the basic environmental issues like garbage and contamination- water- energy and recycling. Eco-schools, after studying these three issues for about one or two years



Figure 2. Eco-Schools project.

and making sure that the students comprehend the issues completely, can carry on their studies in the sub-branch fields like bio-variety, extinct animals, etc. Studies carried out throughout the year are scheduled with an activity plan. To carry out studies in accordance with the plan, finding out the false parts and removing with the suggestions are handled by the students. Coordinator teacher reports the studies to the National Coordinator of Project at the end of the year. Coordinator evaluates the school's success by examining the activity plan and the report at the end of the year (UNCED, 1992).

ROLE OF STUDENTS IN SUSTAINABLE DEVELOPMENT INITIATIVES

Students by their status constitute one of the most enlightened members of the society. They are in most cases, the youths, full of energy, stamina and innovative skills. As educated people and to whom tomorrow belongs, they have a lot to offer in peaceful co-existence. In general, they are expected to be educators and informants of light and not darkness. Their ability to live and work together should have a positive impact on the larger society.

Each student should:

1. Be able to define sustainability.
2. Be able to explain how sustainability relates to their lives and their values, and how their actions impact issues of sustainability.
3. Be able to utilize their knowledge of sustainability to

change their daily actions and consumer mentality.

4. Be able to explain how environmental, social, and economic systems are interrelated.
5. Learn change agent skills (understands the sustainability issues; can analyze the issues and possible solutions from a systems perspective as well as a personality/group dynamics perspective; and can identify and implement viable solutions to shift the organizational, societal or cultural practices and policies towards sustainability).
6. Learn how to apply concepts of sustainability to their campus and community.
7. Demonstrate a commitment to sustainability by actively applying their knowledge of sustainability to their lives, professions, and societies.

Students entering colleges have become increasingly more pragmatic and utilitarian in their approach to education. Higher education is seen as a means to social mobility, as opposed to developing a habit of mind that leads one to leadership and service. The vast majority of students entering higher education are more sheltered and conventional than preceding generations. Their highly structured lives have been framed by standardized tests and inexperience questioning the status quo. These characteristics coupled with an intense desire to be successful leads to a group of students who are motivated to make change, but lack the direction to do so. An ability to think critically beyond the status quo and utilize this knowledge is critical to their success. Employers rely on universities to prepare students for the reality of the world of work. This reality is framed by the

triple bottom line. Corporations want to be perceived as environmentally friendly, fiscally responsible, and attentive and caring towards their employees and communities. Sustainability has become a requisite knowledge area for many industries and careers.

Fostering student learning and promoting citizenship through the engagement of the disciplines is the philosophical and historical core of education in the United States. In the student affairs profession, this learning (in partnership with a co-curricular context about civic engagement and personal development) prepares students to encounter life's big questions. In the 21st century, the questions the students encounter include those around; (1) climate change, (2) inequity in how humanity interacts and treats one another, and (3) the inability of present global economic systems and regulations to provide for all people.

Furthermore, the World Student Community for Sustainable Development (WSC-SD) is a multi-disciplinary network of motivated students with the ability to think and act both locally and globally, and who share the vision to make a difference. Its purpose is to be a leading international student organization that carries out meaningful projects which result in positive and enduring changes that improve lives and communities around the world.

The fundamental purpose of the WSC-SD aims to give motivated students, who are passionate about sustainability, opportunities to learn from each other and to collaborate. The WSC-SD hopes to offer students opportunities to get involved and to take action. Currently, the WSC-SD is comprised of 10 member student communities, 4 partner student communities and a growing network of individual members internationally. The scope and the nature of the student communities differ just as the personal efforts of the individual members vary. The WSC-SD is making a difference in the world because of the projects being implemented by the members. Such projects occur at different levels. Currently, countless projects are being implemented by student communities around the world. The main activity of the WSC-SD is to support each other in taking action for sustainability. Further, at schools across New York, students, teachers and staff are making a difference in their communities with program to recycle, reduce waste,

save energy and conserve resources besides the longrange benefits of good environmental stewardship. Sustainability skills include the ability to:

1. Consciously contribute to healthy ecosystems through activities such as reducing your carbon footprint, and other initiatives so humans and other species can continue to live on the planet.
2. Generate support for change through strong communication skills, consensus building strategies, and with openness to the ideas and struggles of others.
3. Articulate clear, strategic, and practical course for

changes on our campuses and beyond that will contribute to sustainability.

4. Challenge the status quo to achieve transformative change around sustainability.
5. Take action on issues and get involved by joining organizations, assess the political, economic, and cultural landscapes contacting elected officials, or simply share information with colleagues, family, and friends.
5. Apply effective change agent skills and implement them to achieve sustainability.
6. Design sustainable programs, policies, and practices.
7. Educate students to be lifelong learners and role models on sustainability awareness, knowledge, and skills.

Each student should:

1. Be able to define sustainability.
2. Be able to explain how sustainability relates to their lives and their values, and how their actions impact issues of sustainability.
3. Be able to utilize their knowledge of sustainability to change their daily actions.
4. Be able to explain how environmental, social, and economic systems are interrelated.
5. Learn change agent skills (understands the sustainability issues; can analyze the issues and possible solutions from a systems perspective as well as a personality/group dynamics perspective; can identify and implement viable solutions to shift the organizational, societal or cultural practices and policies towards sustainability).
6. Learn how to apply concepts of sustainability to their campus and community.
7. Demonstrate a commitment to sustainability by actively applying their knowledge of sustainability to their: (a) lives, (b) professions, and (c) societies.

Sustainability education should provide faculty and students with an opportunity to explore how their behaviors affect the quality of life of people and other living beings around the globe. It should also emphasize pedagogical learning approaches that are active and experiential, based on inquiry and real world problems. It can be interwoven into all disciplines and can elevate the learning experience to one that is richer in relevance and meaning.

LESSONS LEARNED

One lesson learned from the several years of educational efforts aimed at addressing education about the environment is that there is an opportunity for improved collaboration (Mindi, 1995). Individual roles for each stakeholder are important, but collective action is essential to reduce duplication and leverage scarce resources.

All sectors of society should work toward complimentary goals so that education for sustainability can achieve its full potential. Educators, the private sector, government, and non-governmental organizations (NGOs) should evaluate their respective strengths and address how to better coordinate limited resources. Awareness of shared needs and common ground is the first step.

Educators have identified a number of obstacles that are impeding the integration of information about the environment and sustainability in formal learning settings (Carol, 1993). One obstacle is that the interdisciplinary content of education for sustainability does not easily fit into a discipline-oriented educational process. Other obstacles are the lack of general agreement among professional educators that education for sustainability is a priority and there is insufficient professional preparation for teaching the core content of sustainability issues. Until recently, there has been a lack of consensus on an effective system for evaluating programs and materials in order to ensure quality; however, the North American Association for Environmental Education (NAAEE) has developed material standards for evaluating environmental education curricula (U. S. Department of Commerce, 1994; Goals, 2000).

New approaches to learning may offer significant benefits. New approaches will be more readily accepted if the benefits of teaching education for sustainability are understood (U.S. Department of Education, 1993, 1995). Professional training is needed to enable teachers to introduce new curricula and methods into the classroom. Still another challenge for educators is finding ways to incorporate diverse cultural perspectives. Administrators in universities and colleges should consider adopting sustainable procurement practices and persuade funders to support interdisciplinary research and teaching, which is increasingly needed for finding sustainable solutions (Software Publishers Association, 1995).

NGOs frequently are faced with the challenge of trying to persuade foundations, businesses, and the public to sustain support for effective programs over an extended period of time, rather than changing focus annually. Many non-profit entities, both small and large, have learned that collaborative and synergistic approaches strengthen programmatic initiatives and contribute to longevity and the much-needed financial resource base.

Business leaders can contribute by working with educators to set priorities to ensure that their support for educational programs is allocated to those that are effective, produce measurable results, and survive long enough to have a real impact. *At the same time*, companies can participate in mentoring programmes and internships. In the past, the business sector has made a number of indirect contributions to education for sustainability, such as developing innovative systems-oriented approaches to problem solving. In addition to these kinds of contributions, business can finance training for their workers in the use of sustainable

technologies and develop innovative approaches to protect the environment and ensure economic prosperity.

While there are many successful education efforts underway across the regions of the globe, there is an opportunity for officials to address the lack of effective coordination among the educational activities of individual agencies. Duplication of efforts among agencies as well as a steady decline in fiscal support limit efforts to advance education for sustainability (UNESCO-UNEP, 1988).

In addition, government, the scientific community, educators, and the media should ensure that information provided to the public is accurate, useful and clearly presented. The vehicles, by which information is furnished – ‘internet’, ‘media’, and ‘publications’ - are continually changing and require: (1) ongoing training, (2) skill acquisition, and (3) upgrades in equipment (http://www.plotki.net/cms/images/stories/updatedrumours/sustainable/sustainable_development_education.pdf, Accessed on December 11, 2011).

CONCLUSION

The convergence of a number of trends and events in recent years suggests that a unique opportunity to advance education for sustainability has arrived. On the one hand, the field is benefiting from increased attention from professional societies, continued surges of public concern over local and national and international environmental issues and ongoing engagement by NGOs and governmental bodies (Rawls, 2001). In addition, the impetus provided by the Earth Summit and other international efforts, is catalyzing increased public attention to education for sustainability (Redford and Steven, 1992). This trend is fostering interdisciplinary linkages among the natural and social sciences. Achieving a sustainable future will not happen unless educational system involves citizens and specialists who understand the interconnections among the environmental, economic, and social disciplines.

Today, education for sustainability is positioned to enter the international stage as a priority for the coming decade. Taken together, the initiatives and framework offer a starting point. The hope is that the efforts and initiatives will stimulate further dialogue and action.

The overarching goal is to infuse the concepts of sustainability into all learning: From structured schooling in formal education settings to lifelong learning in non-formal programs. Education for sustainability can help prepare the society and international community for a “fast-paced world of rapid scientific, social, technological, workforce, and demographic changes” (<http://wscsd.org/>, Accessed on December 11, 2011).

Increasingly, citizens young and old are flooded with information. On the Internet, for example, they can find information about:

1. Global-scale environmental changes like global warming, loss of biodiversity, and the ozone hole; and
2. How human activities contribute to these changes, how they are inter-related and how they affect ecosystems and human health.

The most up-to-date scientific information is more readily available than ever before. The key question, *however*, is whether citizens will be able to understand how to use this information. Education is a vehicle that can ensure that technology and the capacity to use information are available to everyone (<http://www.tufts.edu/talloiresnetwork/downloads/RecastingtheRoleofYouthintheMENARegionandBeyond.pdf>, Accessed on December 11, 2011).

Education is bridge “*from the past to the present*” and “*from the present to the future*”. A deep recognition of the importance of education is the necessary first step if the globe is to achieve the level of sustainability. Infusing the concepts of sustainability throughout learning experiences will help foster that awareness. Involvement of educators, government, businesses, and NGOs working toward common goals will lead to an understanding of multiple perspectives and informed decision-making. In true sense, education for sustainability seeks answer to the following questions:

1. What if every person benefited from an education promoting development that is environmentally sound, socially equitable, culturally sensitive and economically just?
2. What if learning was about knowledge and also about doing, being, interacting with others and changing the world?
3. What if formal learning was enjoyable, hands-on and relevant to life outside school while addressing the problems of our world?
4. What if every person benefited from genuine learning opportunities throughout life, in the workplace, and within the community?
5. What if education systems prepared learners to enter the workforce as well as handle a crisis, be resilient, become responsible citizens, adapt to change, recognize and solve local problems with global roots, meet other cultures with respect, and create a peaceful and sustainable society?

To sum up, the environmental dimension of the sustainable development is necessary for the continuation of the living life on the earth. Therefore, all countries in the world should follow a particular environmental policy. *However*, in this matter people should also be informed. Peoples’ fulfilling of their responsibilities leads to a good deal of development by which the natural life is affected positively like decreasing of energy consumption and preventing environmental pollution. The thing which is necessary for peoples’ awareness is to provide them as citizens who are:

1. Environmentally aware, and
2. Active participant about environment beginning from primary school.

Managing sustainable development involves considering interrelated environmental, economic, and social effects and considering policy and programme objectives over an intergenerational time-frame. This integrated and long-term approach is a particularly challenging aspect of managing sustainable development (http://www2.myacpa.org/docs/publications/ACPA_Sustainability_Monograph.pdf, Accessed on April 18, 2012).

REFERENCES

- Abbey R (1995). National Environmental Education Advancement Project”, University of Wisconsin- Stevens Point, Unpublished paper, November
- Carol B (1993). Aslanian, *Trends in Adult Learning* (New York: The College Board, Office of Adult Learning,
- Cohen S (1995). “The Warm Zone,” The Washington Post Magazine, July Carnegie-Mellon University.
- Commission of Global Governance (1995). *Our Global Neighborhood. The Report of the Commission of Global Governance* (Oxford: Oxford University Press, 1995).
- Goals (2000). Educate America Act, H.R. 1804, 1994. U.S. Department of Education, *The Goals 2000 Act: Supporting Community Efforts to Improve Schools* (Washington, DC: Government Printing Office, 1994).
- Harold R (1992). Hungerford, Investigating and Evaluating Environmental Issues and Actions: Skill Development Modules (Champaign, IL: Stripes Publishing Company. <http://wscsd.org/>, Accessed on December 11, 2011. <http://www.gcio.org/edu/pcsd/chap1.html>, Accessed on December 10, 2011
- http://www.plotki.net/cms/images/stories/updatedrumours/sustainable/sustainable_development_education.pdf, Accessed on December 11, 2011.
- <http://www.tufts.edu/talloiresnetwork/downloads/RecastingtheRoleofYouthintheMENARegionandBeyond.pdf>, Accessed on December 11, 2011.
- http://www2.myacpa.org/docs/publications/ACPA_Sustainability_Monograph.pdf, Accessed on April 18, 2012.
- Jayne C (1995). *Blueprint for a Green School* (Jefferson City, Missouri: Scholastic, 1995).
- Julian K (1995). National Wildlife Federation, *Ecodemia* (Washington, DC: 1995)
- Mindi (1995). Maline, *Lifelong Learning: A Conceptual Framework*. The National Institute on Postsecondary Education, Libraries and Lifelong Learning.
- National Science and Technology Council (1994). Office of Science and Technology Policy, “Technology for a Sustainable Future: A Framework for Action (1994). (Washington, DC: Government Printing Office.
- Peter D (1994). Hart Research, Goals and Priority Action Projects: Environmental Education about Fish and Wildlife Conservation”. Troy, Ohio: North American Association for Environmental Education,
- Rawls J (2001). *The Law of Peoples*. Cambridge: Harvard University Press.
- Redford, K, Steven S (1992). “The Brief, Barren Marriage of Biodiversity and Sustainability”. *Bull. Ecological Soc. Am.* 73(1):36-39.
- Rosalyn M (1995). Environmental Education Literacy Needs Assessment Project: Assessing Environmental Literacy of Student and Environmental Education Needs for Teachers-Final Report 1/9/93-95. National Consortium for Environmental Education and Training, 1995. Software Publishers Association (October 1995). *Software Publishers Association Market Report (1994-95 school year)*, Education Section (Washington, DC: October 1995).

- U. S. Department of Commerce (1994). Bureau of the Census, World Population Profile: 1994 (Washington, DC: Government Printing Office, 1994).
- U.S. Department of Education (1993). Office of Educational Research and Improvement, "Reaching The Goals: Goal 5 - Adult Literacy and Lifelong Learning" (Washington, DC: Government Printing Office, July 1993).
- U.S. Department of Education (1995). Interagency Technology Task Force, *Technology Learning Challenge* (Washington, DC: Government Printing Office, 1995).
- UNESCO-UNEP (1988). *International Strategy for Action in the Field of Environmental Education and Training for the 1990s* (Nairobi & Paris, 1988).
- United Nations Conference on Environment and Development (UNCED) (1992). Local Authorities' Initiatives of Agenda 21", "Agenda 21: Programme of Action for Sustainable Development" (New York: United Nations, 1992).
- William B (1969). Stapp, The Concept of Environmental Education. J Environ. Edu. 1:1.