

Sustainable Development and Thresholds of Education: Education for Sustainable Development

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OIDA International Journal of Sustainable Development, Ontario International Development Agency, Canada

ISSN 1923-6654 (print) ISSN 1923-6662 (online) www.oidaijsd.com

Also available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

Abstract: Education for all has always been an integral part of the sustainable development agenda. Education for Sustainable Development (ESD) takes a holistic and realistic approach to learning by linking ecological, social and economic aspects of our daily lives. Thus ESD develops students' knowledge of environmental challenges and their abilities to promote sustainable development by fostering holistic, critical and independent thinking, the ability to formulate and solve problems and the ability to participate in democratic systems and to take responsibility for the well-being of our planet will be discussed in this paper. ESD can be implemented in educational practice which reveals a more competent child who can think and make well considered decisions. Further the paper also tries to highlight the issues of environmental changes and the principle of sustainability through education. The sustainable education for all require a new educational trend which is responsible accountable and expertise in both systemic and educational change for sustainable development. Finally the paper will observe the ways of education for sustainable development with literature review which motivates the principle of sustainability to their everyday activities and decisions.

Keywords: Curriculum, Education, Environment, Society, Sustainability, Decisions

Introduction

Sustainable development can be understood from different points of view. Some people see it as a journey or an ongoing process within the limits of ecological frameworks. The long-term aim of this journey is to have as good a life as possible without hurting or harming other fellow humans or living beings. In the same spirit democracy is very much a part of sustainable development. Agenda 21 (UN, 1992) emphasizes participatory democracy, which means that decisions are made and implemented in cooperation with ordinary citizens like you and me. This is another aspect of the ethics of justice. So, to summarise, sustainable development can be considered as a sort of journey or direction and needs to be thought about or reflected upon.

The goal of sustainable development has proved to be relevant, comprehensive and meaning-ful. It may continue to serve as a guideline or compass needle to indicate development options open to the society in question. But in reality the concept has proved difficult to understand and put into practice. How can we help ourselves, as well as students of all ages, to understand and practice sustainable development? A crucial step in this direction is to discuss what we mean by our needs and also what is required in order to meet the needs of future generations.

There are different interpretations of what is most important in order for development to be sustainable. Some emphasise the importance of a functioning nature and environment, while others emphasise democracy and equality or the stable economic growth of society. The social aspects refer mainly to political institutions, where democracy is particularly crucial to sustainability. The main thing here is that development does not cause social conflict. In practice this means that development should increase people's control over their lives and that all social groups should have the opportunity to participate in decision-making. From a social point of view one may stress the importance of cultural sustainability. Cultural sustainability requires that development takes the values of the people affected by it into account. In addition, a wide range of cultural groups should be maintained and encouraged, and the value of their heritage and traditions recognised.

Defining Sustainable Development

The term “Sustainable Development” became prominent after the Rio Earth Summit in 1992 which prioritised global environmental discussions and improved upon the initial framework introduced at the United Nations Conference on the Human Environment, Stockholm in 1972. The resulting Rio Declaration on Environment and Development, however, advocated the role of education in preventing ecological degradation (Cleveland & Kubiszewski, 2007). There are many definitions of the term „sustainable development“, but the most widely accepted is the one used in the publication “Our Common Future”, sometimes referred to as the Brundtland definition:

“Development which meets the needs of the current generation without compromising the ability of future generations to meet their needs” (UN, 1989). This definition has the advantage of describing a future that all countries could engage with, but the disadvantage of vagueness and contestability. Furthermore, as the definition is not instructive, a universal model of sustainability and sustainable development application has not yet been developed. In order to implement sustainable development, it became necessary to develop the ideas further in terms of defining what sustainable means and the relevance of development and distinguishing it from environmental education. For this report, sustainability is understood as the end state and sustainable development is understood as the process of getting there.

An additional challenge was how to unpack the elements of a new type of development. Environmentalists and researchers recognised, though, that development patterns were harming the environment and that social problems were emerging. In an attempt to address these imbalances, a variety of models and frameworks were created to identify priority areas in sustainable development and ways to achieve progress by identifying economic, social and environmental goals. These three elements compose the three pillars of sustainable development, also identified at the Rio Earth Summit, as a means to clarify the definition of sustainable development and its application. Each one of the three pillars carries similar importance in creating and maintaining stability and balance. People, the planet and profits are all inextricably linked and interdependent, and must therefore be synchronised accordingly. The following models and frameworks provide feasible and understandable ways to co-ordinate the three pillars of sustainable development.

The initial, most basic model of sustainable development to evolve is referred to as the Triple Bottom Line (Elkington, 1994). The idea is that at the organisational level where once there was only one bottom line – finance, now there should be two others: social and environmental. The Triple Bottom Line is conceptually easy to grasp, but very hard to deliver in reality, as it is still vague and offers no prescriptive solutions. This model can be adapted and modified, by adding other areas of consideration. The Triple Bottom Line plus may also include culture, ethics, equality, equity, social responsibility, politics and future generations in addition to economic, social and environmental factors. The Triple Bottom Line model is a useful entry point for sustainable development since it is simple and relatively non-controversial. Although it has less utility when used to develop implementation plans.

Objective of National Strategy for ESD

The National Strategy on Education for Sustainable Development aims to ensure that education contributes to sustainable development by equipping learners with the relevant knowledge (the ‘what’), the key dispositions and skills (the ‘how’) and the values (the ‘why’) that will motivate and empower them throughout their lives to become informed active citizens who take action for a more sustainable future.

Key principles of ESD

- balance environmental , social and economic considerations;
- promote lifelong learning;
- be locally relevant while also linking the local to the national and international;
- engage all sectors of the education system, as well as the non-formal education sector;
- be interdisciplinary and recognise interdependence and interconnectivities across other sectors;
- use a variety of pedagogical techniques that promote active and participatory learning and the development of key dispositions and skills;
- emphasise social justice and equity;
- focus on values and promote active democratic citizenship and inclusion as a means of empowering the individual and the community.
- be an agent for positive change in reorienting societies towards sustainable development.

Definition of Education for Sustainable Development

Education for sustainable development develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgements and choices in favour of sustainable development. It can promote a shift in people's mindsets and in so doing enable them to make our world safer, healthier and more prosperous, thereby improving the quality of life. Education for sustainable development can provide critical reflection and greater awareness and empowerment so that new visions and concepts can be explored and new methods and tools developed (UNECE 2005, 1; UNECE, 2009, 15).

What is Education for Sustainable Development (ESD)?

Rosalyn McKeown (2002) Education is held to be central to sustainability. Indeed, education and sustainability are inextricably linked, but the distinction between education as we know it and education for sustainability is enigmatic for many. The following section describes the components of education for sustainability. ESD carries with it the inherent idea of implementing programs that are locally relevant and culturally appropriate. All sustainable development programs including ESD must take into consideration the local environmental, economic, and societal conditions. As a result, ESD will take many forms around the world. ESD identified four major thrusts to begin the work of ESD: (1) improve basic education, (2) reorient existing education to address sustainable development, (3) develop public understanding, awareness, and (4) training. Let's look at each of the four components.

1. **Improving Basic Education - The First Priority** The first priority of ESD as outlined in Chapter 36 was the promotion of basic education. The content and years of basic education differ greatly around the world. In some countries, for instance, primary school is considered basic education. In others eight or 12 years is mandatory. In many countries, basic education focuses on reading, writing, and ciphering. Pupils learn to read the newspaper, write letters, figure accounts, and develop skills necessary to fulfill their expected roles in their households and community. Girls, for example, may learn about nutrition and nursing. Pupils also learn how their government functions and about the world beyond their community. The recognition of the need for quality basic education sets ESD apart from other educational efforts, such as environmental education or population education.
2. **Reorienting Existing Education - The Second Priority** The term "reorienting education" has become a powerful descriptor that helps administrators and educators at every level (i.e., nursery school through university) to understand the changes required for ESD. An appropriately reoriented basic education includes more principles, skills, perspectives, and values related to sustainability than are currently included in most education systems. Hence, it is not only a question of quantity of education, but also one of appropriateness and relevance. ESD encompasses a vision that integrates environment, economy, and society. Reorienting education also requires teaching and learning knowledge, skills, perspectives, and values that will guide and motivate people to pursue sustainable livelihoods, to participate in a democratic society, and to live in a sustainable manner. Reorienting education to address sustainability is something that should occur throughout the formal education system - that includes universities, professional schools (e.g., law and medicine), and technical schools in addition to primary and secondary education.
3. **Public Understanding and Awareness - The Third Priority** Sustainability requires a population that is aware of the goals of a sustainable society and has the knowledge and skills to contribute to those goals. The need for an informed voting citizenry becomes ever more important with the increase in the number of democratic governments. An informed voting citizenry, which lends support to enlightened policies and government initiatives, can help governments enact sustainable measures. Citizens also need to be knowledgeable consumers who can see beyond the "green wash" (i.e., public-relations efforts that highlight the activities of corporations that are more environmentally responsible while ignoring or hiding the major activities that are not). In today's world, people are surrounded by media (e.g., television, radio, newspapers, and magazines) and advertisements (e.g., bill boards, banners on World Wide Web sites, and logos on clothing). As a result, people must become media literate and able to analyze the messages of corporate advertisers.
4. **Training - The Fourth Priority** Training was also stressed in Chapter 36. The world needs a literate and environmentally aware citizenry and work force to help guide nations in implementing their sustainability plans. All sectors - including business, industry, higher education, governments, nongovernmental

organizations (NGOs), and community organization – are encouraged to train their leaders in environmental management and to provide training to their workers. Training informs people of accepted practices and procedures and gives them skills to perform specific tasks. In contrast, education is a socially transforming process that gives people knowledge, skills, perspectives, and values through which they can participate in and contribute to their own well-being and that of their community and nation.

Higher education is very important for a developing country like India and it is encouraging to increasing human development. Gundeti Ramesh (2013) the Indian higher education system has witnessed significant expansion in recent years, both in terms of the number of institutions as well as the student enrollment. India has more than 400 universities and over 20,000 colleges, of which almost half were set up in the last decade.

According to Ernst & Young, in the last decade, the number of universities in the country grew at a CAGR of 7.5% as against the 4.7% growth observed from 1951-2001. The number of colleges has grown at a CAGR of 11% in 2001-2011 as against 6.1% during 1951-2001. However, salient reason for the discrepancy between Chinese and Indian educational performance is the absence of the state from higher education in India. During 2005-06 period, around 52 per cent of Indian student accessed higher education in private colleges, compared to less than 10 per cent in China. China has grown its higher education sector primarily with the help of universities, which number more than 2300. India has around 600 universities but they have more than 33,000 affiliated colleges. This is the largest number of affiliated colleges in the world, and is 10 times more than that of China. The majority of these universities and colleges in India are private and do not receive financial support from the Indian government.

Education and Sustainability Thresholds

Consider for instance, that when education levels are low, economies are often limited to resource extraction and agriculture. In many countries, the current level of basic education is so low that it severely hinders development options and plans for a sustainable future. A higher education level is necessary to create jobs and industries that are “greener” (i.e., those having lower environmental impacts) and more sustainable. The relationship between education and sustainable development is complex. Generally, research shows that basic education is key to a nation's ability to develop and achieve sustainability targets. Research has shown that education can improve agricultural productivity, enhance the status of women, reduce population growth rates, enhance environmental protection, and generally raise the standard of living. But the relationship is not linear. For example, four to six years of education is the minimum threshold for increasing agricultural productivity. Literacy and numeracy allow farmers to adapt to new agricultural methods, cope with risk, and respond to market signals. Literacy also helps farmers mix and apply chemicals (e.g., fertilizers and pesticides) according to manufacturers' directions, thereby reducing the risks to the environment and human health. A basic education also helps farmers gain title to their land and apply for credit at banks and other lending institutions. Effects of education on agriculture are greatest when the proportion of females educated to threshold level equals that of males.

Education benefits a woman in life-altering ways. An educated woman gains higher status and an enhanced sense of efficacy. She tends to marry later and have greater bargaining power and success in the "marriage market." She also has greater bargaining power in the household after marriage. An educated woman tends to desire a smaller family size and seek the health care necessary to do so. She has fewer and healthier children. An educated woman has high educational and career expectations of her children, both boys and girls. For females, education profoundly changes their lives, how they interact with society, and their economic status. Educating women creates more equitable lives for women and their families and increases their ability to participate in community decision making and work toward achieving local sustainability goals.

Another educational threshold is primary education for women. At least a primary education is required before birthrate drops and infant health and children's education improve. Nine to 12 years of education are required for increased industrial productivity. This level of education also increases the probability of employment in a changing economy. Few studies have been carried out on how education affects environmental stewardship, but one study suggests that a lower-secondary education (or approximately nine years) is necessary to intensify use of existing land and to provide alternative off-farm employment and migration from rural areas. Finally, a subtle combination of higher education, research, and life-long learning is necessary for a nation to shift to an information or knowledge-based economy, which is fueled less by imported technology and more by local innovation and creativity (UNESCO-ACEID, 1997).

Education directly affects Sustainability Plans in the following three areas:

Implementation: An educated citizenry is vital to implementing informed and sustainable development. In fact, a national sustainability plan can be enhanced or limited by the level of education attained by the nation's citizens. Nations with high illiteracy rates and unskilled workforces have fewer development options. For the most part, these nations are forced to buy energy and manufactured goods on the international market with hard currency. To acquire hard currency, these countries need international trade; usually this leads to exploitation of natural resources or conversion of lands from self-sufficient family-based farming to cash-crop agriculture. An educated workforce is key to moving beyond an extractive and agricultural economy.

Decision making: Good community-based decisions - which will affect social, economic, and environmental well-being - also depend on educated citizens. Development options, especially "greener" development options, expand as education increases. For example, a community with an abundance of skilled labor and technically trained people can persuade a corporation to locate a new information-technology and software-development facility nearby. Citizens can also act to protect their communities by analyzing reports and data that address community issues and helping shape a community response. For example, citizens who were concerned about water pollution reported in a nearby watershed started monitoring the water quality of local streams. Based on their data and information found on the World Wide Web, they fought against the development of a new golf-course, which would have used large amounts of fertilizer and herbicide in maintenance of the grounds.

Quality of life: Education is also central to improving quality of life. Education raises the economic status of families; it improves life conditions, lowers infant mortality, and improves the educational attainment of the next generation, thereby raising the next generation's chances for economic and social well-being. Improved education holds both individual and national implications.

The Brundtland Commission defined sustainable development as a pattern of resource use that "meets the needs of the present without compromising the ability of future generations to meet their own needs." In order to preserve the natural world, economic, social and environmental factors must be jointly considered and harmonised. Formal and informal learning, through raising awareness and influencing behaviour, has a pivotal function if sustainable development is to be achieved. This role is especially pronounced in the realm of higher education (HE) because at this level students are being prepared to enter the labour market and emerge with skills to support green economies and as messengers of ideas. Progressively, universities and other higher education institutions (HEIs) have been incorporating sustainable development values and practices into their core activities of teaching and research, institutional management and operational systems. However, the debate thus far has focused primarily on the rationale and reasoning for why sustainable development needs broad adoption. The international discussion, however, has failed to specify the various actions that higher education institutions can adopt.

Quality Education, Teaching Techniques for ESD

UNESCO (2012) has identified ten key aspects that support quality education related to the individual learner and to systems of education. Five of these aspects are at the level of the learner, including:

- seeking out the learner,
- acknowledging the learner's knowledge and experience,
- making content relevant,
- using many teaching and learning processes, and
- enhancing the learning environment (UNESCO, 2005).

By using a variety of teaching techniques, teachers help pupils employ and develop different learning processes. With variety, pupils have a chance to grow as learners and to enhance their skills and capacity to learn and think. A quality education implies that the needs of individual learners will be considered and addressed in developing and delivering lessons. By using a variety of teaching techniques, the teacher attends to the diverse needs of the pupils in the class. Not all students learn in the same way. Some prefer to listen, others to read, and still others to participate more actively. Unfortunately, traditional pedagogies mainly serve pupils who are good at listening, reading, memorizing and sitting still; however, not all pupils have these abilities. Yet education is for all. Rosenberg (2009) meeting the learning needs of all pupils in the classroom is a form of social equity, which is a core concept of sustainability. For many years, the educational community did not link teaching techniques with social equity. Previously, only the pupils who were good at reading, memorizing and reciting excelled in school. Those pupils who were not did not thrive in school and often dropped out, thereby limiting their careers and economic potential.

Dropping out of school is a major social and economic sustainability issue. However, using a variety of teaching techniques to meet the learning needs of pupils can address equity in the classroom. Such practice also demonstrates to the pupils a form that equity and social sustainability can take. Pedagogies used in school, like other educational practices (e.g. a whole-school approach to sustainability), can therefore promote principles of sustainability. Another form of equity inherent in sustainability that is visible in the classroom is related to gender. Considering that men and women, particularly in rural and indigenous societies, tend to have quite different socio-cultural roles, classroom teaching techniques need to be employed in locally relevant and culturally appropriate ways that foster gender equity. The same is true for access to educational resources for both boys and girls.

ESD Pedagogies

Pedagogies associated with ESD stimulate pupils to ask questions, analyse, think critically and make decisions. Such pedagogies move from teacher-centred to student-centred lessons and from rote memorization to participatory learning (Clark, P.; 2000). ESD pedagogies are often place-based or problem/issue-based. ESD pedagogies encourage critical thinking, social critique, and analyses of local contexts. They involve discussion, analysis and application of values. ESD pedagogies often draw upon the arts using drama, play, music, design, and drawing to stimulate creativity and imagine alternative futures. They work towards positive change and help pupils to develop a sense of social justice and self-efficacy as community members.

Maria Salih (2008) Education for sustainable development Education for sustainable development (ESD) is an approach to the whole curriculum and management of an institution (school, college, universities, organizations etc) (<http://www.esdtoolkit.org/references.htm>). It has its roots in environmental and developmental education and it is not a new subject. Therefore, many of the building blocks of education for sustainable development are already present in most institutions. ESD is also about helping pupils to develop knowledge, understanding, values and skills. As such, the curriculum, approaches to teaching and the student's learning experiences are all key elements of an effective ESD. There are three terms that are used simultaneously and interchangeably, namely, education for sustainable development (ESD), education for sustainability (EfS) and sustainable education (SE). Of the three, ESD is most often used because it is the terminology used frequently at the international level and within the UN documents. However, it is important to differentiate between education about sustainable development and education for sustainable development (ESD). The first is an awareness lesson or theoretical discussion while the latter is the use of education as a tool to achieve sustainability. In higher education, there is a need to go beyond awareness, and in this case, 'for' indicates a purpose whereby all education serves a purpose (<http://www.esdtoolkit.org/references.htm>). Education is central to sustainability. However, the distinction between education as we know it and education for sustainability is enigmatic. Nevertheless, education and sustainability are inextricably linked. There are four major thrusts to begin the work of ESD (UNESCO, 1986): (i) improving basic education, (ii) reorient existing education to address sustainable development, (iii) develop public understanding, awareness, and (iv) training.

The important concept like Sustainable development in higher education will enable students to develop a personal critique of society and produce graduates who are ideologically aware and socially critical. It also facilitates 'deep learning' in other areas. For instance, active learning strategies can help develop generic skills such as critical thinking, 'systems' thinking, teamwork, ability to manage change, oral and written communication, negotiation or time management. These skills are much desired by most employer groups.

The social, political and economic implications of sustainability place new demands on many professional groups in society, across government, industry and community sectors. It is more so for an education university to recognize and develop a better understanding of practices that can achieve desired outcomes in ways that advance, not detract from efforts to move toward sustainability. As such, it is utmost important to educate and train students as professional of the future and responsible citizens to endeavour the above obligations. If students understand sustainability as an aspect of their social and ethical responsibility, they will become citizens who see themselves as connected to the natural world and to other humans. Thus, they will have the capacity to facilitate the development of activities that sustain rather than degrade. Institutions of higher education must provide the awareness, knowledge, skills and values that equip individuals to pursue life goals in a manner that sustains human and non-human well-being for all current and future generations (Andy Johnston; 2007).

Conclusion

A particular emphasis is placed on facilitating baseline measurement of existing ESD related provision across the education sector and beyond. This includes specific recommendations for improved data collection in the school

sector, the Further Education and Training sector, the Higher Education and research sector, and the Youth and Community sector. The provision of this data will be complemented by data collated from pupils and teachers about their ESD related needs. The collation of such data will inform future policy making in this area, and ensure that future provision is targeted at learners' and teachers' needs. It will also facilitate target setting and the monitoring of progress towards those targets over the lifetime of this strategy and beyond. Because ESD is a lifelong process, the formal, nonformal, and informal educational sectors should work together to accomplish local sustainability goals. In an ideal world, the three sectors would divide the enormous task of ESD for the entire population by identifying target audiences from the general public as well as themes of sustainability. They would then work within their mutually agreed upon realms. This division of effort would reach a broader spectrum of people and prevent redundant efforts.

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