Sustainable Development in Education Model for Kenya Vision 2030

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Author's contribution

The sole author designed, analyzed, interpreted, prepared the manuscript and given final word for publication.

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ABSTRACT

Education for sustainable development (ESD) which started in 1972 in Rio and was introduced in Kenya in 2010 after signing an MOU between Israel and Kenya as pilot model using a few schools as demonstration centers. It is being debatable if 8-4-4 should be transformed to ESD. Key questions to be addressed; why, how when and whom are our children direction for future? ESD model provides hope for our children and the realization of vision 2030. The 8-4-4 system of education is more skewed towards theoretical knowledge than practical one and falls short in driving Kenyan vision 2030. Education is the most powerful tool in transforming a community and drives people towards sustainable society. All education stakeholders speak in one voice, the need to transform our education system. Strikes, destruction of school facilities, increased use of drugs-alcohol uptake characterize our education. There is a compelling and logical need to transform 8-4-4 education and integrate it with Education for Sustainable Development (ESD) in all education institutions. Lack of innovations and unemployment among others are attributes to 8-4-4 system of education in our society. This research carried a case study of Kiamaina primary school in Nakuru County which is a role model of ESD out of the 9 schools practicing integrated education system (8-4-4 and ESD). Having attended a small holder training workshop at KEMI in Nairobi organized by Ofri- Israel on Education for Sustainable Development (ESD) in July 2015, it captured attention of...
my colleagues and I decided to write this paper. Developed nations have used ESD model and that is the reason for their achievements. ESD is more realistic, scholarly, practical, and holistic and talent orientated education program. The ESD approach stands for self-development in social, spiritual, environmental and scholarly issues. ESD recognizes that each child is unique and develops three most important faculties in human; that is the mind for knowledge development, the physical for body work to use local resources and the spiritual for moral and ethical behavior. Investment in education is key for the future social, economic, political and environmental sustainability. It is strongly recommended that, ESD be adopted in all learning institutions.

**Keywords:** Education for sustainable development; sustainable development; vision 2030.

### 1. INTRODUCTION

In the 21st century and beyond, there are numerous challenges on life, society and the self. What can education for sustainable development offer to it? Every country on earth, at the moment is reforming public education. Sir Ken Robinson world-renowned education starts talk titled “Changing education paradigm” (Quoted by (1 in [3]). There are two questions leading this search for a change: How do we educate our children to take their place in the economics of the 21st century? The second one is cultural, how do we educate our children so that, they have a sense of cultural identity while being part of the process of globalization?

The need for a paradigm change is due to the fact that current system 8-4-4 was designed and conceived for 18th century as part of the intellectual culture of the enlightenment and the industrial revolution. The public education system designed (200) hundred years ago to prepare our children to challenges on the digital and information age. How? Today we as humanity are facing social, Spiritual, economic and environmental crisis. Our energetic and technological mind built towards development has the potential of either making the Earth sustainable or the ability to destroy it [1].

Einstein said that: “We can't solve problems by using the same kind of thinking we used when we created them.” So what are the new ways (Innovations like use of cell phones) of education that can well prepare our youth to fix our world in the digital era? [5].

The required shift from a given system and mindset toward an education for sustainable development force us to rethink, reconnect and act appropriately. What we need is not revolution neither evolution we must create a transformation of our education system with the same teachers and students in a dynamic environment. The first step would be to understand that imagination is more important than knowledge. How will we develop our children imagination? Can a system focused only on academic excellence that leave aside the other thing that make us alive like love, joy, good nutrition for our soul, spirit and body. There is need for education that addresses human and other biodiversity challenges and not education for the sake [1].

### 2. BEGINNING OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

The Education for sustainable development began in 2005 when the United Nations launched the Decade of Education for Sustainable Development. This was the result of a long process of international deliberation on the sustainability of development models, which began in 1972 at the United Nations Conference on Human Development held in Stockholm. Twenty years later, in 1992, the international community affirmed the important role of education, training and public awareness in achieving the goals of sustainable development in Chapter 36 of Agenda 21 at the United Nations Conference on Environment and Development held in Rio de Janeiro. Agenda 21 indicated that all levels of education and training would need to re-orient towards a more sustainable model of development that meets the needs of the present generation without compromising or jeopardizing the capacity of future generations to meet their needs [7]. Through emphasizing education, training and public awareness, Agenda 21 indicated that all sectors of society should be involved in a life-long learning process oriented towards sustainable development. Ten years later, the Johannesburg Implementation Plan produced at the World Summit on Sustainable
Development in 2002, confirmed the importance of Education for Sustainable development. The objectives of the decade were: Improve quality of education at all levels for sustainable development; Reorient education at all levels for sustainable development; Enhance public understanding and awareness for sustainable development; Build capacity for sustainable development [8].

In 2010, the government of Israel through the Ministry of Foreign Affairs Israel’s Agency for International Cooperation and Kenya government through Ministry of education Science and Technology signed MOU on education for sustainable development. The objective of the MOU is to provide a framework for the establishment of Education for Sustainable Development (ESD) that aims at preservation of environmental integrity, economic viability, and a just society for present and future generations. The Republic of Kenya recognizes the importance of ESD in its devolution of management from National to County level government [9]. In acknowledgement of the importance of ESD, the Republic of Kenya, through the Ministry of Education, appealed to the State of Israel’s Agency for International Development Cooperation in the Ministry of Foreign Affairs to establish a joint project directed towards improving the education system of the Republic of Kenya [3].

"From Given towards ESD Driven" is a model of a spiral process that provides mutually reinforcing principles and tools for disseminating ESD as an integral part of learning institutions curricula and educational agenda.

One of the main principles is “Think Global, Act Local”. Awareness of the global crisis is important, but action should be taken at the local level. Our model provides the tools for each public education institution and the community to authenticate their actual needs and existing resources. Combining needs and resources can effectively, chart the path for the future, promote ESD and improve local and global economy.

"From Given towards ESD Driven model" was developed and has been in practice for the last 6 years in Education for Sustainable Development and Social Entrepreneurship Department at the David Yellin Academic College of Education in Jerusalem [3].

To date, training courses have been conducted in Israel and approximately 700 Kenyans have been trained (200 in Israel and 500 trained within Kenya). The 700 trained officers include education secretary, Mrs Leah Rotich, from Kenya Ministry of Education Science and Technology, school Principals and teachers. Additionally, annually experts visited Kenya with the objective of advising and counseling regarding the implementation of the expertise they gained in Israel. During these visits, mobile courses are held in Nairobi, Kisumu and Mombasa to ex alumni and new participants.

3. EDUCATION FOR SUSTAINABLE DEVELOPMENT AND VISION 2030

Kenya Vision 2030 focuses on three main pillars; Social, Economic and Political developments from 2008 to 2030 aiming at making Kenya a newly industrializing, “middle income country providing high quality life for all its citizens by the year 2030” [7]. The plan is to be implemented in successive five-year terms with the first plan covering 2008-2012. The education goals of the 2030 Vision are to provide globally competitive quality education and training and research for development. Education is meant to reduce literacy rate at all levels. Vision 2030 also aims to capitalize on knowledge in science, technology and innovation (STI) in order to function more efficiently, improve social welfare, and promote democratic governance. STI is to be applied in all the sectors, and the education and training curricula in the country is to be modified to ensure that the creation, adoption, adaptation and usage of knowledge becomes part of formal instruction. A new incentive structure to be developed to support the use of STI in specialized research centers, and universities [1].

4. EDUCATION FOR SUSTAINABLE DEVELOPMENT EXPERTS

Yudith Rosenthal (Director of the Aharon Ofri Training Center) and Eyal Bloch (co-founder of Institute for ESD in Israel) says “the path to establish institutions based on the tenets of ESD requires thorough, long-term development and support activities. The Aharon Ofri International Training Center was established in 1989 as a professional extension of MASHAV (Israel’s Agency for International Development Cooperation) whose activities are targeted to meet the Millennium Development Goals (MDGs). Since its inception, the A. Ofri Center has trained thousands of professionals from countries throughout the world Israel [10].
Center cooperates with senior staff in the Israeli Ministry of Education, academic experts, governmental organizations and non-governamental organizations. In addition, it communicates and cooperates with key international organizations such as UNESCO, OECD, USAID, UNODC, OAS, IOM and the World Bank. In adopting the UN’s MDGs, the A. Ofri Center contributes to the sustainable development of human resources internationally, based on knowledge and experience accumulated in Israel [10].

5. WHY ESD COMPONENTS NEEDED

The ESD program offers many valuable learning environments for students, teachers, parents, community and other stakeholders as follows; (1) Respect, value and preserve the achievements of the past; appreciate the wonders and the peoples of the Earth; (2) Live in a world where all people have sufficient food for a healthy and productive life; (3) Assess resources, care for and restore the state of our Planet; (4) Create and enjoy a better, safer, more just world; (5) Be caring citizens who exercise their rights and responsibilities locally, nationally and globally. (6) Represents a new vision of education, a vision that helps people of all ages better (7) Understand the world in which they live, addressing the complexity and interconnectedness of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, health, conflict and the violation of human rights that threaten our future. (8) Involves critical thinking and problem solving: leading to confidence in addressing the dilemmas and challenges of sustainable development; (9) It is Multi-method: word, art, drama, debate, experience, different pedagogies which model the processes. Teaching that is geared simply to passing on knowledge should be recast into an approach in which teachers and learners work together to acquire knowledge and play a role in shaping the environment of their educational institutions [11].

6. A CASE STUDY

The study was conducted in one of the ESD model school (Kiamaina Primary School in Nakuru County, Kenya) out of the four pilot schools. Some of the demonstration centers of ESD include;

1. Nairobi Primary School
2. Ngunyumu Primary School, Korogocho – Nairobi
3. Big Pen Informal School, Korogocho – Nairobi
4. Sahajanad Special School in Mtwapa, Mombasa

Initial phase of the planning and integration was held last year in Israel where KEPSHA (Kenya Primary Schools Heads Association) Principals and Ministry of Education officials were trained. Over 90 stakeholders have already undertaken this training. The Partnership expected to go on until 2016.

7. FINDINGS AND DISCUSSION

7.1 Kiamaina Primary School Nakuru (The Study Site)

The research study was undertaken using Kiamaina primary school as a model ESD school. The school stood out as one of the best and a representative of the others as ESD model center. The school began ESD program in 2013 as a pioneer demonstration site. The school has a population of over 2,200 students who are fully involved in education for sustainable development. There are 50 teachers and 5 support staff. The school is a day institution and students are given meals during school time. The school occupies 14 acres of land and 85% of it is used for establishment of agro forestry and crop farming. The school agricultural farm has different crops including maize, beans, and varieties of vegetables such as cabbages, kales, spinach, arrow roots, onions, pilipili hoho, tomato, and potatoes among others. The school has established greenhouse for tomato growing. The school keeps dairy animals which provide milk. Different varieties of rabbits are kept. Students themselves with the supervision of their agriculture teacher are able to change the landscape of the school. The students run a well-established school farm called ESD farm. The rabbits kept can be loaned to the community for husbandry and the rest are sold to customers. The students can purchase rabbits at cost of Ksh. 1,200 and sell them at Kshs 3,000 to 4,000 making a reasonable profit. The rabbit sales assist the students and parents to enhance their lifestyles. The school is well forested with the reason of mitigating climate change prevention of soil erosion and beautification. There is a beautiful tree nursery and fully grown forest trees which is tendered by students. The trees also shield the school from wind damage and act as
dust reduction, shade, firewood and timber. There is school weather station using local materials. The farmers in the surrounding community benefit a lot from the school weather station by providing them with information regarding the environment. The following projects are ongoing.

**Project 1 - Rabbit Link**

The school has established Rabbit farm fully managed by the students. One rabbit costs Ksh.3, 000 to 4,000 and so far the school has sold 79. There is a strong link between the school and the surrounding community regarding the rabbit project which has drawn that closeness. The students buy the rabbits and keep them at home and once mature, the students sell them and make good profits which they use for different purposes; pay for school trips and support parents at home. The school now trains the community and encourages them to keep rabbits due to its economic viability. The project provides a situation for holistic learning and sharing the values and profits. Teachers provide knowledge to students and local farmers, the school management provides funds for the rabbit project, the students manage the project and the community provides the market. What a wonderful link that has brought all the four together.

**Rabbit Link**

The significance of the Rabbit link project is: the students are in action and are ambassadors, the school and community are linked, the school management provides resources (investors) and involves community in matters of environment and development, the community feels the sense of belonging and connected to school and the Rabbit link completes the whole circle of education goals.
Project 2 Fish Pond Project

The school has established a small fish pond which provides good nutritional value and income. The project can sell nearly 1300 fish in a month. Students are the managers of the fish project. The project provides learning in a practical way and students are provided with proteins during their lunch meals.

Project 3 Tomatoes Project

Tomatoes are grown in green house and the output is a success story. The students do all the activities from the preparation of the greenhouse for planting to the harvesting and storage. The proceeds are used to develop the school and also assist in feeding the students. This is unbelievable what our children can do if given opportunities with the right education.

Project 4 Agro forestry

The school has well established planted forests. The students prepare tree nursery, plant the seedlings and protect them from damage until the trees are mature for harvesting. The tree products are used for timber for construction of the school, firewood for fuel, Shades, beauty, wind breakers, protect soil, habitat for many birds and small animals, increase biomass amount, medicinal products. The school may also sell the timber which is a source of income. It means that, students don’t just plant trees but grow forest.

Project 5 Vegetables

Nearly every ground in the school is utilized. All kinds of vegetables such as onions, kales, cabbages, potatoes, red pepper, among others are grown and managed by the students. The vegetable products are used by the school to provide lunch time meals and the surplus is sold to the community for revenue generation.
Project 6 School Weather Station

The students have developed a complete weather station using local materials which provide accurate information about the condition of weather. The students are responsible for the management of the weather station. Weather information is important to everyone and helps people to plan their activities and particularly to the farmers. The community benefits a lot from this weather station as the students broadcast the weather so that they prepare their activities regarding the weather focus.

Project 7 Maize and Beans

The school has set aside four acres of land for subsistence farming which they grow maize and beans. Maize and beans harvested are used to feed the students at school during lunch time. The success story is that the problem of students dropping out of school has significantly reduced. The project has increased students population in the school.
Significance of the School Projects

The projects and students participation have established a strong community- school engagement concept in all areas of development. The students are creative, innovative and industrious. The students provide food for feeding themselves because the food produced from the projects goes towards feeding program. The students from poor households are supported by the projects. The school management use the proceeds for development purposes and incur less expenditure especially purchase of food to feed the students. The school retention rate has increased tremendously through caring for the less unfortunate students. The ESD and the Rabbit link concept develop students cognitively, logically, spiritually, socially, scholarly, environmentally, physically, morally, lovingly and economically. The ESD is not just academic gains producing academic dwarfs but more focused on the development of the child through identification of talents, promoting such talents, considering the community as important to the child success and commitment to good environmental resource use and health towards sustainability of biodiversity for ages. The ESD project in the school has developed mitigating mechanisms through agro- forestry, diversification programs to cope with climate change, global warming, food insecurity, hunger, and drug and alcohol addictions among others.

It was also observed that; the public shares local knowledge and creative thinking with government agency. The project has reduced conflicts through building trust and implements policy matters regarding education and development.

The students acquire knowledge and skills in all areas of the curriculum including skills in questioning, investigating, critical thinking, problem-solving, and decision-making. They are able to apply what they have learned to further studies, work, leisure, daily living and a lifetime of learning.

The learning environment has an important role to play in education for sustainable development, as does the support available for staff and students. Students’ learning relates not only to the formal curriculum but also to the campus environment, the local community and the culture of the institution. Links between these different areas are encouraged. Physical learning environment forms an important part of the educational context -and influences both what and how students learn. Students are increasingly cognizant of 'hidden curriculum' messages which can run counter to what they are being taught through the formal curriculum (for example, if the university is not sustainable in its estates management, this may undermine formal teaching around sustainability). There is often significant potential to make use of the campus and estates management in teaching and learning.

The role of an educator is to provide an environment in which, divergent views can be shared and explored in a safe environment, there are opportunities for deep and critical reflection on students 'own perspectives and what has influenced their thinking and practices in this area, democratic and participatory learning approaches are modeled, interdisciplinary approaches, systems thinking and holistic thinking are encouraged and teaching, learning and assessment activities are linked to real-life concerns.

8. OTHER ESSENTIALS FROM THE STUDENTS CENTERED LEARNING

The case study has revealed how child-friendly schools are linked to their communities are critical. Schools are communities themselves and child-friendly schools in particular promote a strong sense of community. But schools do not exist in isolation. They reside within the communities they serve and must cultivate relationships with them.

The links between schools and their communities can vary in pattern and intensity. At one extreme are schools that simply have a physical presence. They are not linked with, dependent on or accountable to their communities in any serious sense. Other schools, especially child-friendly schools, are organically linked in multiple ways. It is essential to understand the basis of this rich linkage.

The community school is a human engineering laboratory functioning on a broad basis to help people fulfill their basic needs. The basic academic needs of children and teen-agers are fulfilled to a large extent within the formal portion of the program. Many other needs are fulfilled within the informal portions of the community school program. Much of the experience in the informal program strengthens performance and accomplishment in the academic areas of learning. Adults participate in many learning
activities during the informal portion of the school day and obtain service through the school that helps them fulfill their basic needs (Spencer & Fred, 1966). The community school takes the lead in involving children, youth and adults (sometimes separately and sometimes all groups combined) in programs that help to solve community problems. When individual learning needs of all age groups are fulfilled and when through united effort community problems are solved, community development will take place on many fronts (Spencer & Fred, 1966).

9. CONCLUSIONS

From the case study it can be concluded that the Students are directly engaged in the project from the start to the end. This is student oriented learning. The students’ talents are identified and developed by the teachers and also parents/ Sponsors. Students’ engagements in any project reflect their talents and choice of career in life and create self-discipline both in school and at home. Creativity and Innovations manifestations enhanced. The produce from the ESD farm feed the students with good nutrition in school and support students who are less fortunate from poor homes who cannot afford meals. The management gets extra cash to develop the school programs. Weather station information established in school is very helpful to farmers in the surrounding communities. There is sense of creation of functioning ecosystem services and well balanced environment through agro forestry. Finally there is high enrolment and retention of students in the school. ESD program teaches and embrace love, peace and security both in school and at home. ESD uses locally available materials, simple and easy to adopt.

Kiamaina primary school is a success story of an institution that reduces poverty, mitigates environmental hazards, creating a strong link with the community and most importantly, engaging students to make a difference in their entire life styles for sustainability of the planet Earth.

10. RECOMMENDATIONS

This paper made the following recommendations;

1. ESD experts should be engaged in training the entire educators and managers from the teachers to the senior managers in education system.

2. Education should be child centered and not teacher centered.

3. Eliminate extra coaching hours. Children should be given more free time to engage in practical assignments.

4. Learning time should begin at 8.30 am and ends at 3pm. Rest of the time students engage in discovery of their environments and how they can be involved in turning local resources into form that provides solutions to human problems at local and international levels.

5. Extracurricular activities should be emphasized such as sports, agriculture, environmental conservation, business entrepreneurship, drawing, metal and woodworking, music, art and crafts, community service.

6. Students should enroll for volunteer services. Participating in community services integrate students with society.

7. Address sustainable development issues such as climate change and poverty reduction in the classroom and outside the classroom.

8. Use participatory teaching methods such as project-oriented learning and role plays to motivate learners to take action for sustainable development.

9. Encourage learners to organize and participate in activities and projects in favor of sustainable development in their communities.

10. Explain the link between concepts in school curricula and sustainable development at the global and the local level.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES


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