



Educational Technology

Elixir Edu. Tech. 110 (2017) 48146-48148

Elixir
ISSN: 2229-712X

Curriculum Adaptation in Education for Sustainability

Basavaraju K.T and Dr.Sharmista

Assistant Professors, BGS. B.Ed College, Mysore, Karnataka, India.

ARTICLE INFO

Article history:

Received: 24 July 2017;

Received in revised form:

30 August 2017;

Accepted: 7 September 2017;

Keywords

Sustainability,
Curriculum.

ABSTRACT

National curriculum framework (2005) focuses on 21st century learning, ensuring learners are equipped to participate in and contribute to their own society and the wider world. An important aspect of this is encouraging students to consider significant future-focused issues such as sustainability. The future-focus theme of sustainability should be evident throughout *the curriculum* in school education. Structuring learning around a unifying theme such as sustainability provides opportunities for students to make connections between learning areas, competencies, and values. It requires teaching and learning approaches that draw on all elements of effective pedagogy and focuses on empowering students to take action for a sustainable future. Sustainability connects to the principle environmental health is personal health. The curriculum should endorse a place for the school, the family, the community to focus on the place of the student in their own world. Therefore, the school-based curriculum should supports holistic teaching programmes and learning pathways which enable the learner to engage purposefully with the environment. Education for sustainability is about learning to think and act in ways that will safeguard the future wellbeing of people and our planet. Many contexts, topics, or issues that students could explore have a connection to education for sustainability. There are opportunities in most learning areas for students to examine how the resources we use and what gets left over affects the earth. Teachers can introduce students to attitudes and values towards the environment, and create opportunities to explore their own. Students will also have opportunities to take action on issues that are meaningful to them, explore why an issue is important and develop the skills they need to create change.

© 2017 Elixir All rights reserved.

Introduction

Meaning of sustainability

In ecology, sustainability (from *sustain* and *ability*) is the property of biological systems to remain diverse and productive indefinitely. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. In more general terms, sustainability is the endurance of systems and processes. The organizing principle for sustainability is sustainable development, which includes the four interconnected domains: ecology, economics, politics and culture. According to Lynn ,R et.al (2014)sustainability science is the study of sustainable development and environmental science.¹Sustainability can also be defined as a socio-ecological process characterized by the pursuit of a common ideal.(Wandemberg, J.C (A 2015)¹.An ideal is by definition unattainable in a given time/space but endlessly approachable and it is this endless pursuit what builds in sustainability in the process .. Healthy ecosystems and environments are necessary to the survival of humans and other organisms. Ways of reducing negative human impact are environmentally-friendly chemical engineering, environmental resources management and environmental protection. Information is gained from green chemistry, earth science, environmental science and conservation biology. Ecological economics studies the fields of academic research that aim to address human economies and natural ecosystems.

Review of related literature

Littledyke M, Taylor N, Eames C (2009)said education for sustainability is a top priority in the present international climate, where the media is dominated by environmental, social, political and economic concerns about current problems that will affect our future. As young children will become the next generation of adults, it is vital that they are educated about sustainability issues, so they can be critically aware of the problems our society faces and take positive action to help preserve their future in a rapidly changing world. While teachers are generally concerned about sustainability issues, perceived constraints of current curriculum priorities commonly inhibit education for sustainability from being developed in many classrooms. Education for sustainability should promote knowledge , positive attitudes towards and suitable action for, sustainability in relevant, meaningful, enjoyable and creative ways. Athanasia Chatzifotou.(2006) reported the results of a research study on the impact of environmental education (EE) upon english primary school teachers, and then discussed the findings of the study in relation to education for sustainable development, as EE is considered one of the two precursors of education for sustainable development. The study begins by considering the development of EE in the english national curriculum of primary schools and then briefly outlines and reports two major findings of the study, comparing them against the new context of education for sustainable

Tele:

E-mail address: sharm91@yahoo.com

© 2017 Elixir All rights reserved

development. Overall, the study demonstrated how EE, the national curriculum and teachers have interacted with each other, while arguing that there seems to be a parallel course among education for sustainable development and EE in the national curriculum, with no apparent crossroad to link the two and explain how education for sustainable development is partly based on EE as well. Mercè Junyent and Anna M. Geli de Ciurana (2001) discussed achieving a culture of sustainability in university training for future professionals. The aim of this study was to bring new elements to the process of reorienting university studies towards sustainability. The methodology of the project was based on participatory action research. The ACES model is defined by 10 characteristics, detailed in this study, which can orientate a diagnosis of the level of curriculum greening and the design and application of the strategies and actions in order to facilitate incorporating the sustainability dimension in higher education. The potentialities and limitations found were also discussed. The ACES model has started a process for reorienting higher education studies towards sustainability. Julie Kennelly and Neil Taylor(2015) argued that although the need for education for sustainability in pre-service teacher education is well recognised, little has been published to indicate how this might be incorporated into university . This study described one attempt to encourage pre-service primary teachers to include education for sustainability in their future work. It included a discussion about some of the choices made regarding teaching methods and content. The overall purpose of the study was to encourage others to contribute their ideas to the discussion over how best to incorporate education for sustainability in pre-service teacher education. Daniella Tilbury(2006) traced the history of environmental education which revealed a close connection between changing concerns about the environment and its associated problems and the way in which environmental education is defined and promoted. In the 1990s, mounting concern over environment and development problems has meant greater support for an educational approach, which not only considers immediate environmental improvement as an actual goal, but also addresses educating for 'sustainability' in the long term. Although some education literature has embraced this new focus of environmental education for sustainability (EEFS), it has failed to outline the essence of this approach and has neglected questions about how it differs from the environmental education of the 1980s. No document exists to date which translates the goals of EEFS into guiding principles for its development in schools. Essentially, EEFS needs further definition. This study is an attempt to engage the debate about what constitutes this new focus of environmental education and how it may differ from conventional approaches to environmental education.

Education for sustainability

This includes learning about:

- the environment – water, land, ecosystems, energy, waste, urban living, transportation
- the interactions between the natural environment and human activities, and the consequences of these
- the choices and actions we can take to prevent, reduce, or change harmful activities to the environment.

Central to this learning is the exploration of attitudes, values, and behaviours with respect to the environment - both our own and those of others.

Concepts

Central concepts that students can develop understanding include:

- **sustainability** – the ability of individuals, groups, and communities to meet their needs and aspirations without compromising the ability of future generations to meet theirs
- **equity** – respect for all life, social justice, intergenerational equity, finite resources
- **interdependence** – biodiversity, community, cultural diversity, democracy, globalisation
- **responsibility for action** – taking action, informed decision-making, citizenship, consumerism, enterprise, resilience, and regeneration.

Principles

Sustainability is explicitly identified as a significant theme for inclusion in the 'Future Focus' principle.

High expectations	Supporting and empowering all students to achieve by enabling them to experience and participate in learning towards a goal that they see can make a difference.
Cultural diversity	Recognising the importance of learning from the experiences of others and respecting the histories and traditions that will support a sustainable future for all.
Inclusion	Systems thinking in education for sustainability values and supports diverse skills and abilities, as we all have a part in ensuring a sustainable future.
Learning to learn	Education for sustainability requires learning to be active and developed with students as they explore, plan, and implement solutions to environmental issues.
Community engagement	Recognising that environmental issues are embedded in society, and providing opportunities for students to work with their community to find solutions to local issues.
Coherence	As an integrated discipline, education for sustainability requires the contribution of all learning areas, key competencies, and values to support learning and decision making for action on environmental issues.
Future focus	Sustainability is a significant theme both now and into the future.

Values

Students will be encouraged to value:

- “ecological sustainability including care for the environment”

In exploring environmental issues, people's interests in the environment, and actions for a sustainable future, students will have many opportunities to:

- learn about their own values and those of others
- develop their ability to express their own values
- explore with empathy the values of others
- critically analyse values and the actions based on them
- discuss disagreements that arise from difference in values and negotiate solutions
- make ethical decisions and act on them.

Key competencies

- Capabilities for living and lifelong learning.
- More complex than skills, the competencies draw on knowledge, attitudes, and values in ways that lead to action.
- Education for sustainability seeks to empower students of all ages to take action on issues of concern and interest to them. It describes this process as action competence, and uses all the key competencies, combined with experiences from the learning areas, to make this goal possible. The development of action competence and the key competencies is seen as part of the process of taking action.

Context or topic	Concept of EfS as an understanding for students to develop	Sustainability issue	The vision for action – what students might do that targets the sustainability issue
Insects The Bush Birds Endangered animals	Interdependence We are learning about how living things work together to meet their needs.	Loss of biodiversity and habitats for a range of species	Butterfly gardens Skink gardens Native plantings Bird Forests
Water Waterways Rivers The water cycle	Interdependence We are learning about connections between land use and waterways.	Erosion of land increasing sediment in waterways	Streamside plantings Stormwater drain campaign
Waste Litter Rubbish Recycling Shopping	Equity We are learning about finite resources.	Increasing amounts of waste that natural systems cannot process	Packaging audit of school to establish what "waste" comes into the school Create waste system to manage biodegradable organic matter in the school
Transportation	Responsibility for action We are learning to make informed decisions and take action.	Reliance on a non-renewable resource with large energy and waste outputs	Creating a "walking school bus" for students to get to and from school safely Renovation of the school bike sheds for safe and easy storage of bikes for staff and students
Fair trade	Responsibility for action We are learning to make informed decisions and take action.	Ensuring food is produced and sold in ways that the Earth can sustain and people gain a fair price for their goods	Creating a school garden or orchard Working with a community garden to process fruit for local sale

Learning areas

All learning should make use of the natural connections that exist between learning areas and that link learning areas to the values and key competencies. It is important for both teaching purposes and planning that schools provide clear statements of learning expectations that help chart progress. The curriculum should include

- **Health and Physical Education** - Healthy Communities and Environments
- **Science** - the Nature of Science, Participating and Contributing, Planet Earth and Beyond, Living World
- **Social Sciences** - Place and Environment
- **Technology** - Technological Knowledge, Technological Practice

Taking action

Students taking informed action to address issues of sustainability and participate in creating a sustainable future is the core of education for sustainability.

Taking action is a process of learning that:

- uses meaningful contexts for learning
- empowers students to do something with their learning: "It's not what you know, it's what you do with what you know" (source unknown)
- supports participation in the wider community, such as taking part in decision making processes
- develops the key competencies leading to action competence in education for sustainability.

Students need to be given multiple opportunities to plan, implement, and carry out actions in response to what they know and understand about the causes of sustainability issues and possibilities for change.

Examples of actions include:

- a personal response or behaviour change such as taking the bus rather than the car
- a project to rehabilitate or prevent degradation of the environment, such as excluding stock from waterways or planting to increase biodiversity

- the development of a system to reduce use of natural resources such as installing a rain water collection system to use on gardens or in toilet cisterns
- a project to educate others on an environmental issue, such as a movie highlighting ways to make a wrapper-free lunch and how this reduces waste to landfills
- **How might these elements work together?**

Table showing inter-relationships between aspects of education for sustainability:

References

- Athanasia Chatzifotiou. Environmental education, national curriculum and primary school teachers. Findings of a research study in England and possible implications upon education for sustainable development. *The Curriculum Journal* Vol. 17, Iss. 4, 2006 Pages 367-381 | Published online: 11 Dec 2006
- Daniella Tilbury Environmental Education for Sustainability: defining the new focus of environmental education in the 1990s. Published online: 28 Jul 2006. Pages 195-212
- Julie Kennelly and Neil Taylor. Education for Sustainability for the K-6 Curriculum: A Unit of Work for Pre-Service Primary Teachers in NSW Published online: 01 June 2015
- Littledyke M, Taylor N, Eames C. Education for Sustainability in the Primary Curriculum: A Guide For Teachers. 2009.
- Lynn R. Kahle, Eda Gurel-Atay, Eds (2014). *Communicating Sustainability for the Green Economy*. New York: M.E. Sharpe. ISBN 978-0-7656-3680-5.
- Mercè Junyent & Anna M. Geli de Ciurana Education for sustainability in university studies: a model for reorienting the curriculum Published online: 30 Aug 2001 Pages 763-782.
- Wandenberg, JC (August 2015). *Sustainable by Design*. Amazon. p. 122. ISBN 1516901789. Retrieved 16 February 2016.