

Analysis of pre-service teachers' perception towards the economic, environmental, social and cultural dimensions of Education for Sustainable Development

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Abstract

Education for sustainable development (ESD) enjoys a huge momentum worldwide in which the role of teachers for making sustainable development goals a reality has been recognized significantly. Teachers through their knowledge, attitudes and skills can bring the learning about these concepts to the curriculum and class room interaction and are in a position to influence their students. Therefore it is pertinent, that teachers are sensitised towards these issues, so that they prepare and nurture their students for making appropriate and responsible choices which contribute to a sustainable future. At this juncture it becomes crucial to understand their priorities and awareness level in context of the sustainable development. The present research paper aims to analyse the perception of forty post graduate pre-service teachers of the Chandigarh region, towards ESD through the dimensions of economic sustainability, environmental sustainability, social sustainability and cultural sustainability. For this researchers have adopted qualitative content analysis methodology for an in-depth study of the subjective responses through an open ended question. The findings suggest that most of the respondents associated the perception of ESD strongly with environmental sustainability. It is noted that the pre-service teachers lack a holistic approach towards ESD. On the basis of the findings it is recommended that there is an urgent need of integrating the concept of ESD consciously and conscientiously in India's teacher education programmes.

Key words: Education for sustainable development, teacher education, economic sustainability, environmental sustainability, social sustainability, cultural sustainability, content analysis

Introduction

The economical dominant vision of ours is leading us into the black hole of humanitarian crisis, where in the name of modern development a culture of capital accumulation, profit making and materialism has flourished. This kind of a development is questioning the sustainability of our present as well as future generation on this mother Earth. In this situation of great despair and concern, education has been accepted worldwide as a powerful instrument to transform our thinking for making choices that will help in achieving a sustainable future(Mckeown,2002; UNESCO, 2002; Dawe, Gant, & Taylor; 2003,Dale& Newman ,2005;Landorf, Doscher and Rocco,2008;Little & Green, 2009;UNESCO 2016).

Education for Sustainable Development (ESD) is a paradigm for thinking which focuses that the nature of present development must change in order to save the fate of our species and other species as well. We have found in ESD a ray of hope , which through its humanistic vision towards education, highlights that learning content (knowledge) , pedagogies (skills) and values should a) nurture every individuals' self potential for achieving sustainable future and b) provide a life of dignity , which can be instrumental in achieving sustainable development (UNESCO, 2015).

The teachers, *Gurus*, are the torch bearers of any educational system who lead the younger generation from darkness to light. To make the concept of ESD a reality the need of the hour is to have transformational educators who understand the depth of this concept and are able to align their formal and informal activities of the classrooms with the essence of sustainable development, as acknowledged by the gamut of studies existing in the literature (UNESCO, 2005;Shallcross& Robinson, 2007; Nolet, 2009 ;Evans, Stevenson, Lasen, Ferreira, & Davis, 2017).However it has also been reported the pre-service and in-service teacher education curriculum have very little exposure to sustainability

issues as discipline oriented teaching is encouraged. Lesson plans are still made keeping in focus the discipline, hence, failing in addressing the real life problems which are not limited by the tight disciplinary boundaries (Borg, Gericke, Höglund, & Bergman, 2012).

To catalyse our actions and to identify the gap areas the analysis of perception of teacher education programme stakeholders towards ESD is crucial as it will help in directing our efforts in a more meaningful and systematic manner for a strong foundation of a sustainable future. With this background the present analytical study was undertaken to find that how and to what extent postgraduate pre-service teachers perceive the meaning of ESD in context of the dimensions of economic sustainability, environmental sustainability, social sustainability and cultural sustainability.

Development of Operational definition of Education for sustainable development

There are many terms like education for sustainability (EfS), Sustainability education (ES), which are used in the same context as education for sustainable development (ESD) describing teaching learning practices for a sustainable future. ESD is the term most frequently used globally and by the United Nations.(McKeown, 2002; Murray & Cotgrave, 2007). Therefore, in the present research work the term ESD was used.

There exits many definitions of ESD in the literature (Wals, 2009; UNESCO2014) and the lack of any one fixed definition indicates how new and ever evolving this concept is.

The authors of the present study have developed following operational definition for ESD for their research work :

“Education for sustainable development (ESD) is a process based, interdisciplinary approach to teaching and learning, based on the parameters of : social sustainability , economic sustainability, environmental sustainability, cultural sustainability, to empower the learner to take value based informed decisions and make responsible actions, for present and future generations.”

The three major categories which emerged on the basis of the operational definition are Knowledge, Skills and Values which are further divided into sub-categories

The present paper discusses about the knowledge category of the ESD which is elaborated in the following section.

Category : Knowledge

The knowledge category represents the knowledge, awareness and understanding of the certain topics which a teacher must be aware of so as to use this knowledge confidently and flexibly in their discipline to address the issues of sustainable development by planning an interesting and relevant lessons for their students. This will help students to develop a rich understanding and appreciation of the global realities in context of sustainable development. There are four subcategories which are defined as following:

1. Economic sustainability(Ec) :Economic sustainability is the ability of an economy to support a defined level of economic production indefinitely, which ensuring the efficient use of natural resources, rational use of energy and labour, while promoting environmentally friendly solutions and protecting the cultural heritage in a manner that they will not be depleted and will remain available for future generations.
2. Environmental Sustainability (En) :It means that natural capital must be maintained by following the rule of not using renewable resources beyond their regenerative capacity.
3. Social Sustainability(So) :It is about maintaining and nurturing the human capital by investing in education, health , law, governance for achieving overall well being of individuals, the societies.
4. Cultural sustainability (Cu) :It is to sustain cultural capital which builds upon cultural uniqueness,cultural beliefs, cultural practices, heritage conservation of a community.

Methodology

A sample of forty postgraduatepre-service teachers were randomly selected who were pursuing Master of Education (M.Ed) programme from the colleges and departments of the teacher education institutions of the Chandigarh region, offering M.Ed general course and affiliated to Panjab University, Chandigarh .They were asked to give a written response to an open ended question: “What do you think “Education for Sustainable Development” might mean?”. This gave an opportunity to the pre-service teachers to respond freelyin their own words about their perception towards ESD.

Thereafter, a qualitative deductive content analysis methodology was adopted for the analysis of the forty subjective responses for which a codebook was developed with categories, sub-categories, indicators, and guidelines for coding. UNESCO’s Teaching and Learning for a Sustainable Future was the guiding programme for the development of the

codebook .The outline of coding framework developed for the knowledge category for the present study is presented in Table 1.

Table 1
Coding framework developed for content analysis: Knowledge category

CATEGORY	SUB-CATEGORY	INDICATORS	Code generated	TLSE Modules
KNOWLEDGE (K)	Economic Sustainability (Ec)	1.Responsible consumption <i>Related rubrics: Mindful consumption, consumer education, waste management, judicious use of resources, preserve resources</i>	K.Ec.1	Module 9 :Consumer education
		2.Responsible tourism <i>Related rubrics: responsible holidaying, eco-tourism, sustainable tourism</i>	K.Ec.2	Module 16: Sustainable Tourism
		3.Globalisation <i>Related rubrics: global education, fair trade, local-global connection, poverty</i>	K.Ec.3	Module 18 : Globalisation
		4. Others-Ec: <i>general mention of economic issues</i>	K.Ec	
	Environmental Sustainability (En)	1.Organic farming <i>Related rubrics: sustainable farming, sustainable agriculture, organic farming, integrated farming,</i>	K.En.1	Module 15: Sustainable Agriculture
		2.Climate change: <i>Related rubrics: renewable energy, green house effect, eco-friendly life style, conservation of resources, global warming</i>	K.En.2	Module 19: Climate Change
		3. Others-En: <i>general mention of environmental issues</i>	K.En	
	Social Sustainability (So)	1.Human Rights <i>Related rubrics: child rights</i>	K.So.1	Module 7: Citizenship Education
		2.Fundamental duties <i>Related rubrics: constitution , responsible citizen</i>	K.So.2	
		3.Promoting Holistic Health <i>Related rubrics: yoga, physical education, all round development, developing mental abilities.</i>	K.So.3	Module 8: Health Education
		4.Women empowerment <i>Related rubrics: gender equality, gender studies</i>	K.So.4	Module 12: Women and sustainable development
		5.Population growth <i>Related rubrics: family planning, sex education</i>	K.So.5	Module 13: Population and Development
		6.Hunger and malnutrition <i>Related rubrics: food security, nutrition</i>	K.So.6	Module 14 : Understanding World Hunger
		7.Rapid urbanisation <i>Related rubrics: sustainable community</i>	K.So.7	Module 17: Sustainable communities
		8. Others-So : <i>general mention of social issues</i>	K.So	
	Cultural Sustainability (Cu)	1.Cultural diversity <i>Related rubrics: linguistic and regional variation, diverse cultural environment of students , local specifics, diversity of classrooms coming from different communities</i>	K.Cu.1	Module 10: Culture and religion for sustainable future
		2. Indigenous knowledge <i>Related rubrics: traditional wisdom, practical wisdom, indigenous knowledge , drama, folk stories, songs , art, music</i>	K.Cu.2	Module 11: Indigenous knowledge and sustainability
		3. Others-Cu: <i>general mention of cultural issues</i>	K.Cu	
	Mention of word	Manifest mention of words like awareness, understanding and knowledge.	K	

	Knowledge			
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Results

The codes generated for the knowledge category were further analysed for four sub-categories :economic sustainability, environmental sustainability, social sustainability and cultural sustainability .A detailed overview of the frequency of each code out of total codes generated for knowledge category is presented in Table 2

Table 2:

Frequency distribution of each code generated for Knowledge category

Code	Explanation: Category.Sub-category.Indicator	Occurrence of code in the knowledge category (%)
K.Ec.1	Knowledge. Economic sustainability. Responsible Consumption	28.9%
K.Ec.2	Knowledge. Economic sustainability. Responsible tourism	0.0%
K.Ec.3	Knowledge. Economic sustainability. Globalisation	0.0%
K.Ec	Knowledge. Economic sustainability.Others-Ec	3.9%
	Total % of codes generated for Economic sustainability	32.8%
K.En.1	Knowledge. Environmental sustainability. Organic farming	0.0%
K.En.2	Knowledge. Environmental sustainability. Climate change	1.9%
K.En	Knowledge. Environmental sustainability. Others-En	42.3%
	Total % of codes generated for Environmental sustainability	44.2%
K.So.1	Knowledge. Social sustainability. Human rights	0.0%
K.So.2	Knowledge. Social sustainability. Fundamental duties	1.9%
K.So.3	Knowledge. Social sustainability. Promoting holistic health	0.0%
K.So.4	Knowledge. Social sustainability. Women empowerment	0.0%
K.So.5	Knowledge. Social sustainability. Population growth	0.0%
K.So.6	Knowledge. Social sustainability. Hunger and malnutrition	0.0%
K.So.7	Knowledge. Social sustainability. Rapid urbanisation	0.0%
K.So	Knowledge. Social sustainability . Others-So	3.8%
	Total % of codes generated for Social sustainability	5.7%
K.Cu.1	Knowledge. Cultural sustainability. Cultural diversity	0.0%
K.Cu.2	Knowledge. Cultural sustainability. Indigenous knowledge	0.0%
K.Cu	Knowledge. Cultural sustainability.Others-Cu	0.0%
	Total % of codes generated for Cultural sustainability	0.0%
K	Mention of word knowledge/awareness/understanding	17.3%

From the table 2it can be inferred that maximum codes generated addressed the indicators of environmental sustainability (44.2%) followed by economic sustainability (32.8%), the mention of word knowledge (17.3%) , social sustainability (5.7%).There was absence of mention about cultural sustainability.

Each sub-category is discussed as following:

1. Economic sustainability: As apparent from table2 ,it was found that economic sustainability constituted 32.8% of the total proportion for the knowledge category in which the indicators responsible consumption emerged as a the majority indicator with 28.6% , followed by others-Ec with 3.9%of the total proportion. For the indicator responsible consumption the various responses obtained mentioned about limiting the use of natural resources, using natural resources effectively and efficiently ,responsible and judicious using and regarding reuse of natural

resources. Further for the indicator others-Ec, there was mention of addressing the economic issues in general by the respondents.

However, there was no mention about responsible tourism and globalisation.

2. Environmental sustainability: As apparent from table 2, it was found that environmental sustainability constituted the major proportion with 44.2% for the knowledge category, in which the indicator others-En contributed to maximum proportion with 42.3%, followed by climate change with 1.9%. For the indicator climate change, it was found that respondents mentioned about reducing pollution. Further, for the indicator others-En there was mention of improvement of environmental conditions, save environment, preserving natural resources, protect and conserve environment, stability of ecosystem, save resources, sustaining natural resources which highlighted the importance of environmental sustainability in general by the respondents.
However, there was no mention about organic farming.
3. Social sustainability: As apparent from table 2, it was found that social sustainability constituted 5.7% of the total proportion for the knowledge category, in which the indicator Other-So contributed 3.8% followed by fundamental duties with 1.9%. For the indicator human rights it was found that there was mention about the importance of human rights to address world problems. For the indicator fundamental duties, it was found that respondents mentioned about the importance of becoming good and responsible citizen and lastly for the indicator Others-So the mention of social issues highlighted the importance of social sustainability in general.
However there was no mention about promoting holistic health, women empowerment, population growth, hunger and malnutrition and rapid urbanisation.
4. Cultural sustainability: As apparent from the table 2, it was found that *there was absence of mention about cultural sustainability.*
5. Mention of word Knowledge (K): As apparent from table 2, it was found that the mention of word knowledge and its synonyms constituted 17.3% proportion for the knowledge category.

Discussion

The analysis of post-graduate pre-service teachers subjective responses towards ESD for the knowledge category suggested that respondents associated environmental sustainability strongly and significantly followed by economic sustainability issues with the meaning of ESD. The general concern towards environmental sustainability like save, protect and conserve environment was the major idea addressed by the respondents when asked about their perception towards the meaning of ESD. Along with irresponsible consumption also emerged as the majority indicator.

The manifest presence of words knowledge, awareness, information, understanding showed that respondents clearly feel that "knowledge" plays a crucial role in context of the meaning of education which will contribute for a sustainable development. The social sustainability was recognised comparatively less by the respondents. Moreover, many critical social issues like promoting holistic health, women empowerment, population growth, hunger and malnutrition and rapid urbanisation remained unaddressed by the respondents in context of expressing their perception towards the meaning of ESD. It is indeed thought provoking that there was complete absence of the cultural sustainability indicators. This highlights that postgraduate pre-service students do not associate cultural sustainability with the meaning of ESD.

The overall picture exhibited that for post graduate students of teacher education programme ESD means environmental concern and responsible use of natural resources through responsible consumption.

Conclusion and Perspective

We live in an interconnected world where we want our children to become responsible global citizens who are sensitive towards our mother Earth. For this we have to prepare them to look into the happenings around them through multiple perspective so that they make thoughtful and informed decisions and choices. For this we need transformational educators who bring awareness amongst our kids towards sustainability issues and help them to look towards various issues through different dimensions i.e economic, environmental, social and cultural. Through this process we will be able to construct a education system which will accelerate our journey towards a sustainable future.

However, the findings of our present study reflected that post graduate pre-service teachers, who have already experienced teacher education programme for a certain duration and are preparing themselves to take upon more responsible and wider roles in the education field, lack the holistic vision towards sustainability. For them the meaning of

ESD is about addressing the environmental dimension. Furthermore, the economical dimension addressed (responsible consumption) also indicated the indicators which were overlapping with environmental sustainability.

The absence of dimension of cultural sustainability is a worrisome finding. The cultural lens empowers us to evaluate and judge the changes happening around us be it in the economic, cultural or environmental field. The preservation of cultural diversities expands our choices, widens our perspectives for rich sustainable wisdom which can be practiced and passed on to our future generations (UNESCO, 2010). In this context it is strongly suggested that the teacher education programmes should integrate relevant aspects of our cultural practices, indigenous knowledge which promotes sustainability.

India is undergoing a huge educational metamorphosis, therefore we recommend for the formulation of the national curriculum framework for the teacher education programmes which should develop a balanced perspective of ESD with respect to economic, environmental, social and cultural dimensions amongst the pre-service teachers. It is envisioned that with approximately 1.3 billion population of India, the intensity of ripple effect created by the sustainability empowered teachers, teacher educators and educational policy makers will have a profound effect on leading the mankind towards a sustainable future.

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