

Teaching –Learning of Environmental Studies (EVS) at the Primary School Level: A Position Paper

Karnataka D.Ed Curriculum Framework

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EXECUTIVE SUMMARY

India greatly realizes that moving towards sustainability lies in its strategy of unprecedented mobilization of people's mind, ideas, institutions and resources to come up with a socially just and environmentally sustainable blueprint for survival (MOEF Report, 2002). Education has been recognized to play a central role in this odyssey.

Recognizing the centrality of education in environmental protection and conservation, India's National Policy on Education (1986) states "There is a paramount need to create a consciousness of the environment. It must permeate all ages and all sections of the society beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process"

Subsequent to this policy statement, several efforts have been made to reorient and reorganize school education and get Environmental Education (EE) more formally established. School textbooks, by and large, in all subjects and at all levels, have been revised for their contents and methodology from an environmental perspective (greening of textbooks). It is, however, recognized that salutatory effects of these curricular revisions will not be sustained unless it is coupled with appropriate changes in teacher education curricula (pre-service and in-service). Realizing the significance of introducing EE in teacher education, the National Council of Teacher Education has made an attempt to develop a curriculum framework in Environmental Education for the four levels of teacher preparation, viz., Early Childhood Care and Education (ECCE), Elementary teacher training, Secondary and Senior Secondary and Vocational education.

While the above serves as a broad framework, much deliberation is required at individual state level while incorporating EE in their teacher education, as it involves addressing several questions relating to the perspective of EE to be introduced in teacher education (TE) at different levels, modalities of introducing it, contents and transactional strategies to be dealt with, building required capacities in teacher educators, making available resource materials, Weightage that needs to be given to theory and practicum, 5) Evaluation of the outcomes, 6) time frame, etc .

At a time when the school curriculum in Karnataka State has been infused with environmental and sustainability themes and activities, there is all the more urgency to integrate 'Teaching-Learning of EVS in teacher education curricula, so that the student teachers and teachers are able to understand, appreciate, adopt and contribute to the development of a multidisciplinary perspective of environment and its conservation in children.

This position paper is prepared to provide a framework for introducing EE/EVS in D.Ed Curriculum of Karnataka. More specifically, it deliberates on the following:

1. The foundations/basics of environmental studies and its significance in elementary teacher education;

2. Planning and including 'Teaching- Learning of EVS' as a compulsory paper in elementary teacher education, to be studied by all the student teachers;
3. Identifying and including appropriate content, teaching-learning methodologies, projects and assessment techniques.

Based on the rationale provided in the position paper, the sub-committee which drafted it, recommends "Teaching-Learning of EVS at the elementary school level" as a compulsory paper in the first year of D.Ed Curriculum. The document provides a broad sketch of the contents, approaches, methodologies and evaluation of EVS to be included in the curriculum.

By firmly positioning EVS in D.Ed curriculum, it is earnestly hoped by the sub-committee that we would be advancing one more step in the journey of Education for Sustainable Development that too in the Decade of Education for Sustainable Development.

Dr.M.J.Ravindranath

Teaching-learning of EVS at the Primary School Level

PREAMBLE

Agenda 21, the action plan of the United Nations on sustainable development, states “Education, including formal education, public awareness and training should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. It is widely accepted that **Education** is the most effective means that society possesses for tomorrow. Education is humanity’s best hope and most effective means in the quest to achieve Sustainable Development (UNESCO, 1997).

Realizing **Education** as a potential instrument of social change, the National Policy on Education, 1986 made Environmental Education a part of the general education at all levels, in particular at the school level. The significance and urgency of creating environmental awareness in school children has also been upheld by the Supreme Court through its directive to the Central and State educational authorities to make EE compulsory at the school and collegiate levels.(Hon'ble Supreme Court Directive - 2003).

However, what has been well realized is that it is the teacher who is the key to the successful implementation of Environment Education in the classroom as he/she would ultimately be analyzing, interpreting and implementing it. If teachers (pre-service and in-service) do not possess the necessary knowledge, understanding, skills or commitment to environmentalize and transact the curriculum, it is very unlikely that they will be able to produce environmentally literate students. Given this central role of teachers, **Teacher Education**¹ both at the pre-service and in-service levels becomes vital. Hence, UNESCO describes teacher preparation in Environmental Education as the “**Priority of Priorities**”.

Endorsing the significance of intensive teacher preparation, the National Document brought out by the National Council of Educational Research and Training (NCERT), 2004 states “If Education has to be an effective tool of change in the general attitude towards the treatment of the environment, teacher education will have to respond to this need effectively at all levels. The content and processes of teacher education will have to equip teachers with a proper understanding of and love for the nature around and the skill of inculcating these among their students. This may result not only in a healthier society, both physically and mentally, but also the much needed replenishment and sustenance of natural resources notwithstanding all the material and industrial development” (NCERT, 2004).

If the above priority has to be adequately addressed then teacher preparation (pre-service and in-service) in EE necessarily have to be comprehensive and intensive and not just be fragmented and adhoc. Teacher preparation in EE has to be holistic and competency based in order to help teachers in effectively infusing environmental perspective in their teaching.

This Position Paper highlights the significance and scope of EVS and argues for its inclusion in the D.Ed Curriculum.

¹ Teacher Education and Teacher Preparation are used synonymously in this document

INTRODUCTION

“If the world is saved, it will be saved by people with changed minds, people with a new vision. It will not be by people with old minds and new programmes. It will not be saved by people with old vision but a new programme” – Daniel Quinn

One of the major concerns of this millennium is taking good care of the environment which nurtures all of us. We have now been living in a situation where environmental degradation is occurring at an unprecedented pace. Hence the immediate need of the day is bringing about an awareness of the environment and its problems at all levels. Sincere efforts are needed to re-establish our links with the environment. We must protect the environment from ‘ourselves’. It is our own life style, greed, selfishness and lack of awareness that is the starting point of all the problems related to the environment. The great scientist Albert Einstein has said “you cannot solve a problem with the same mind-set which created it at the first place”. It is only when we truly begin to see ourselves as an indivisible part of the environment, and then there would be a fundamental shift in our mind set towards its conservation.

Teachers play a significant role in the society because of their influence on the children with whom they interact. An important challenge before us at present is to infuse in to the learning process, a spirit of question. In this process, environment becomes a medium for engaging young minds in the excitement of first-hand observation of nature and understanding the patterns and processes in the natural and social worlds. In this context, it has necessitated a relook in to the curriculum of teacher education, so as to “prepare the young minds to appreciate the importance of environment in a holistic manner, not only for human survival but also for all life forms on Earth”.

Recognising the central role of education in environmental protection and preservation, the National Policy on Education (NPE) states that “There is a paramount need to create a consciousness of the Environment. It must permeate all ages and all sections of society, beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process” (NPE, 1986).

The NPE, 1986 and the subsequent educational policies have positioned environmental awareness and education firmly in school education. The latest National Curriculum Framework (NCF) 2005 recognizes the critical role of the environment as the context in children’s learning by emphasizing that “Learning takes place through interactions with the environment around, nature, things and people, both through actions and through language. The physical activity of moving, exploring and doing things, on one’s own, with one’s peers or in the company of adults, and using language—to read, to express or ask, to listen and to interact—are the key processes through which learning occurs. The context in which learning takes place is thus of direct cognitive significance for meaningful learning” (NCF 2005).

It is well re-iterated that any salutary change in the content and pedagogy introduced in the school curriculum, if it has to sustain, requires appropriate teacher training and mechanisms of sustained implementation and follow up. EE is an important study area at the school level and its effective implementation requires a change in the mindset of teachers from mere content transmitters to that of facilitators and co-learners. It calls for a shift in classroom practices from mere *'transmission of the content'* to *'transaction of the content leading to transformation of behaviours'* in children. Teachers, thus, become the key to the successful transaction of environmental education in schools. They play a central role in building necessary abilities and competencies in children for exploring, understanding, appreciating and participating in environmental protection and conservation. In order to achieve this, the teacher needs to be empowered to create awareness, attitude and concern in children and facilitate them in understanding and solving environmental problems.

This calls for a systematic and robust training in the content and pedagogy of EVS for elementary teachers.

This document is aimed at placing Environmental Education (EE) or Environmental Studies (EVS) in the elementary teacher education agenda and recommending it as a compulsory paper/course at D.Ed.

WHAT THIS DOCUMENT PURPORTS TO PRESENT?

The position paper purports to provide a framework:

4. For appreciating the foundations/basics of environmental studies and its significance in elementary teacher education;
5. For planning and including 'Facilitating EVS' as a compulsory paper in elementary teacher education, to be studied by all the student teachers;
6. For Identifying and including appropriate content, teaching-learning methodologies, projects and assessment techniques.

UNDERSTANDING THE THEME "Environmental Studies (EVS)"

The concept of Human-Nature interdependence highlights the dynamic nature of the relationships existing in the environment. Human beings have been impacting their environment and in turn are being impacted by it. EE aims at bringing awareness about this relationship between human beings and environment and the environmental problems/issues we are facing today because of our negative impact. It also provides the basic knowledge about how indigenous tradition and cultural practices are related to the environment. It inculcates habits, values, emotions and attitudes required to maintain and promote quality environment for the survival of mankind. EE aims at

developing a sense of responsibility and eagerness to ensure appropriate actions to solve environmental problems.

EE aims at bringing about a change or transformation in the cognitive, affective and psychomotor behaviours of children. It is an action-oriented, project centred, and participatory process. It enables the development of self-confidence, positive attitudes and personal commitment towards environmental protection and improvement of the environment. In essence it is a learning process that increases one's knowledge and awareness about the environment and associated challenges, helps develop the necessary skills and competencies to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1977).

In the last two decades, EE has been synonymously used with many phrases like Education for Sustainable Development (ESD), Environmental Education for Sustainable Development (EESD), Environmental Studies (EVS), Education for Sustainable Future (ESF), etc. Although these phrases vary subtly in their connotations, however, what is common in all these is that they have a consistent commitment to changing knowledge, attitudes, values and skills favoring protection and conservation of the environment (Ravindranath, 2007).

In the National Curriculum Framework for Schools, Environmental Education is introduced in the elementary education as Environmental Studies (EE in Schools, 2004 (a); Habitat & Learning -2005).

SCOPE & SIGNIFICANCE OF EVS IN SCHOOL AND TEACHER EDUCATION

EVS in the elementary education is visualized as an integrated subject area which draws upon insights from sciences (physical, chemical and biological), social studies (history, geography, civics, etc) and environmental education (protection and conservation). The approach in EVS goes beyond single subject approach and helps children to use the contents and methods of science and social sciences and environment to solve environmental problems/issues in future.

One of the main focuses of EVS is to expose children to the actual world they live in. The learning situations/experiences of EVS help children to explore and connect with their natural and human made surroundings. EVS helps children develop their own insights into the functioning of several things or understanding human processes in their environment. Such interactions with their surrounding environment are immensely important in the healthy development of children. Such interactions also enhance children's learning capabilities by providing concrete learning experiences. The concept of local specificity with global thinking is the key to EE. Think globally and act locally is a well known phrase in EE.

Holistic thinking or integrated perspective is the heart of EE. Many of the great educational philosophers and thinkers like Pestalozzi, John Dewey, Maria Montessori, Rudolf Steiner, Krishnamurthy, Aurobindo, etc., have invariably reflected on the aim of

education as helping a child to develop as a 'wholesome individual', cultivating the moral, emotional, physical, psychological and spiritual dimensions of personality. In essence they have visualized a 'holistic' education. Holistic education aims at helping children be the 'most that they can be', which amounts to development of a child's intellectual, emotional, social, physical, artistic, creative and spiritual potentials. This is done not by just rote learning in classes but through direct engagement with the environment. EVS, by enabling children to explore, understand, appreciate and value their environment, helps them to derive meaning and joy of learning through connecting with their immediate environment, natural world and the community. Thus, it is child-centered and focuses on "experiential learning" rather than "teaching". EVS aims at developing in children a *holistic or integrated perspective* of our environment as a composite of natural and human-made surroundings with the intricate interactions and interdependence that exists. The approach in EVS goes beyond single subject approach and helps children to use the contents and methods of science and social sciences and environment to solve environmental problems/issues in future (Ravindranath, 2011).

The school should become a demonstration of the environmental values that the education system is trying to convey. The school needs to exemplify good environmental practices and should communicate these to not only students, but also to the community. A comprehensive support system both within and outside the school system will have to be developed. This would involve various components with inputs from academicians, intellectuals and the society outside the school system. It would also involve media, networking with different media groups, institutes, NGOs, and other organisations.

EVS, with the inherent values of environment and its conservation, is just not a subject/study area alone. It is a process leading to transformation of behaviours, and a way of life. It focuses on all the three domains of learning – cognitive, affective and behaviours/actions in a graded manner. The content and transactions of EVS thus recognizes respects and resonates with all forms of diversity in the local context. Teachers have a major role in this process.

Thus, the scope of EVS at the school level may be summarized as enabling children to:

- Connect with their natural and human made environment understanding our dependence on the various components of environment (biotic, abiotic and human made)
- Develop a holistic understanding of their environment
- Develop a multidisciplinary perspective to understanding of our environmental issues/ problems and appreciate the impact/s of our daily activities on its integrity.

- Develop favourable attitudes and habits to protect and preserve our environment

A careful reflection on the above objectives would reveal that they are centred on developing in children curiosity and awareness about their surroundings, knowledge and understanding of their environment and their relationships or connections, developing affect attributes (appreciation, values and attitudes) and skills of observation and measurement, collection of information and its processing, creative expression, etc. All the above resulting in an informed concern and care for the environment, its protection and conservation.

Schools play a critical role in supporting and helping children explore their environment and construct their own meaning from their interactions/experiences. By structuring and organizing learning experiences for children to explore, understand and express their experiences, the transaction of EVS in the primary stage contributes to development of conceptual understanding, attitudes and values, skills and habits/practices relating to range of subjects/focus areas at the primary level. Such learning experiences also introduce children to some of the hidden benefits such as development of appreciation and respect for nature and natural resources, diversity that exists in the environment, ability to express feelings and thoughts, etc.

All the above requires teacher education at the elementary level to become more responsive in training teachers (pre-service, in-service) adequately in the content, approaches and methodologies of transacting EVS.

The D.Ed curriculum which prepares teachers for facilitating learning at the elementary level needs to have a multidisciplinary approach with sensitivity to environment besides other important factors such as diversity, equity, gender, etc. It should emphasize on learning rather than teaching.

The primary teacher education, hence, should incorporate EE/EVS as a major part of the foundation component:

- For grounding teachers in competencies related to child centred and experiential learning; in using environment as a medium of learning, using creative teaching and exposition methods, constructivist approaches of teaching, etc.
- To enable the teachers to function as curriculum constructors rather than curriculum transmitters – using appropriate content, learning experiences and assessment techniques.
- To inculcate sensitivity and foster positive attitude and values towards environment ;
- To enable the teachers to use locally available resources (low cost and no cost) for contextualizing children's learning.
- To train teachers to adopt school based and community oriented approaches.

POLICY ENDORSEMENTS AND AFFIRMATIONS SUPPORTING EVS IN SCHOOLS AND TEACHER EDUCATION - IMPLICATIONS FOR ELEMENTARY TEACHER PREPARATION

Considering the central role of education in environmental protection and conservation, in the last few decades, particularly after the landmark Stockholm Conference in 1972, several policies and affirmations have been made for introducing environmental awareness and education in general education streams and in teacher preparation.

A few of the relevant policy endorsements/affirmations/efforts that compel incorporation of EVS in teacher preparation particularly at the elementary² level are given below.

Basic Education: The movement of Basic Education launched by Mahatma Gandhi in 1937 was perhaps the first serious attempt at relating education in schools to local environmental needs. The essential elements of Basic Education were: productive activity in education; correlation of curriculum with the productive activity and the social environment; and intimate contact between the school and the local community. The best that Basic Education had to offer was incorporated in the Report of the Education Commission (1964-66) so as to relate it to the life, needs and aspirations of the nation. For the primary stage, the Report recommended that "the aim of teaching science in the primary school should be to develop proper understanding of the main facts, concepts, principles and processes in the physical and biological environment" (Kothari Commission).

The National Policy of Education (1986): NPE gave a definite thrust to EE in the school curriculum. It stated that "protection of the environment is a value which along with certain other values must form an integral part of curriculum at all the stages of education". The thrust is evident from the policy statement which reads as "There is a paramount need to create a consciousness of the Environment. It must permeate all ages and all sections of society, beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process".

The NPE, 1986 and the subsequent educational policies (NCFSE, 2000, NCF 2005) have given environmental education an explicit place in school education. The national system of education, as defined in the NPE, visualized a national curricular framework which contains a common core including several elements having direct bearing on the natural and social environment of the pupils, such as, protection of the environment, content essential to nurture national identity, and inculcation of scientific temper. These core areas are expected to occupy a place of prominence not only in the instructional materials, but also in the classroom and out of school activities. In addition, the curriculum of work experience, popularly known as Socially Useful Productive Work

² Elementary education covers standard 1 to 8. In Karnataka it includes both primary and higher primary levels.

(SUPW), was reorganized to introduce a rigour and systematic gradation in the programme with the provision of direct participation of children in environment related fields, like planting and nurturing of trees, environmental sanitation, etc.

The National Conservation Strategy and the Policy Statement on Environment and Development (1992): A policy of the Govt. of India to respond to the need for laying down the guidelines that will help to weave in environmental considerations into the fabric of national life and developmental process. The policy statement mentions in detail the environmental problems seen in the country caused either due to poverty and under-development or due to the process of development itself and recognizes the importance of building environmental awareness and education in the population to progress towards sustainable development.

The National Curriculum Framework for School Education (NCFSE-2000): NCFSE highlighted the need for including environmental concerns at all the levels of schooling. It mentions “understanding of the environment in its totality, both natural and social, and their interactive processes, the environmental problems and the ways and means to preserve the environment.” Following these recommendations, a subject like “the Art of Healthy and Productive Living”, along with language and mathematics, was introduced at the level of Classes I and II. All the three Subjects are woven around the immediate environment of the learners and integrate environmental concerns as well. In Classes III-V, Environmental Studies becomes a separate subject. In Classes VI-X, Environmental Education (EE) has been integrated suitably in social sciences, languages and science and technology (NCERT, 2004 (a)).

Apex Court Ruling on EE: The efforts to institutionalize EE at all stages of education was accentuated with the Directive of the Supreme Court of India (1991) which reiterated that “We accept in principle that through the medium of education, awareness of the environment and its problems related to pollution should be taught as a compulsory subject. The Directive further stated that so far as education up to the college level is concerned we would require every state government and every education board concerned with education up to the matriculation stage of even intermediate colleges to immediately take steps to enforce compulsory education on environment in a graded way”.

Further, in response to the PIL filed in Supreme Court by Sri M.C. Mehta regarding making EE compulsory at school level, on 18 December 2003, the Hon'ble Supreme Court directed NCERT to prepare and circulate a model syllabus in EE for all the states to adopt in their school education curriculum. NCERT was appointed as a nodal agency to supervise the implementation of this Court's order.

In the light of this directive, in 2004, the NCERT undertook a massive national consultation. It also initiated a review of the national curriculum framework towards which 21 National Focus Groups were set up on various problems and subject areas of education in schools; Habitat and Learning was one of them.

National Curriculum Framework (NCF, 2005): Endorsing that schools have a major role to play in ensuring that children are socialized into a culture of self-reliance, resourcefulness, peace-oriented values and health, NCF incorporates many curricular thrusts such as Education for Peace, Habitat and Learning, etc., in addition to the conventional school subjects such as languages, mathematics, science and social sciences. The thrust area “Habitat and Learning” emphasizes the need for Environmental Education at the school level for moving towards sustainable development.

Habitat and Learning: The focus group on Habitat and Learning was constituted to address the area of EE. The position paper states that “The new paradigm of education, embodying the spirit of science, of democracy, and of caring for the environment, would emphasise a number of key elements:

- Learning rather than teaching;
- Building capacity for critical thinking and problem solving;
- Locale specificity in the context of a global vision;
- Multidisciplinary approach;
- Multi-sourced and accessed, rather than top-down, controlled and orchestrated in nature;
- Participatory with broad involvement of peers and other community members;
- Life long and continuous in character;
- Sensitivity to diversity, equity and gender;
- Knowledge generation;
- Empowerment, rather than indoctrination.

The recommendations of the focus group ‘**Habitat and Learning**’ highlighted the need for developing training modules, teacher empowerment/education and development of activities and projects in order to develop skills and competencies among the students.

EE /EVS AS REFLECTED IN NCERT TEXT BOOKS

Based on the NCF 2005, at the national level, Environmental Education (EE) is introduced at the elementary education level as Environmental Studies (EVS). EVS for classes III to V deals with the study of our environment (physical, biological, social and cultural) with an emphasis on its preservation and conservation. EVS at the elementary level is an integrated subject which draws upon insights from sciences (physical, chemical and biological), social studies (history, geography, civics, etc) and environmental education (protection and conservation).

The syllabus for EVS (classes III-V) in the NCERT textbooks is woven around six common themes – Family and friends, Food, Shelter, Water, Travel and Things we make and do. Hence it is thematic in approach and not topic based (as it used to be in the earlier years). Each theme begins by helping children explore their immediate ‘self’ to include

his/her family (environment), neighbourhood, the locality and also the country. Such a structuring of the content has been visualized to help the child locate himself/herself in a larger context – as part of a community, the country, etc. This thematic organization also brings in a concept of mutual dependence of ‘self’ with ‘others’ and natural environment, providing the child with a holistic perspective of the environment and the Planet Earth which we share with all other living organisms - interdependence and interrelatedness of all living things and life support systems.

Besides, the thematic organization of the contents in EVS cuts across the boundaries of several disciplines such as social sciences, sciences, languages, history, geography, civics, etc., developing in children an interdisciplinary perspective to understanding environment and environmental problems. EVS, thus, is an interdisciplinary study of how humans interact with their environment – physical, biological, social and cultural. EVS is also envisaged not only as a value education as regards environment but is a life skill education as it encourages children to develop knowledge, ideas, values and attitudes about the world and how it works and learn to communicate and collaborate with other children and adults in their environment. Because of this holistic approach in standard 3 -5 there are no separate text books for science and social science subjects. On the contrary, EVS is introduced as a composite of these subjects.

This effort of NCERT in revising its text books and developing a model syllabus based on NCF has necessitated other states in the country to emulate this. This has also necessitated the renewal of existing teacher training curriculum to incorporate this thrust in educating teachers.

EE / EVS IN TEACHER EDUCATION

After the emphasis given to EE in the NPE-1986, the NCERT brought out detailed guidelines and syllabi to prepare practicing teachers at the primary and secondary levels (NCERT, 1991b, and c). Training in-service teachers to teach EE/ EVS, was an important part of this curriculum. Through national initiatives such as the Programme of Mass Orientation for School Teachers (PMOST) and Special Orientation of Primary Teachers (SOPT), several thousand teachers have been introduced to the content and methodologies of EE. In response to the Supreme Court’s directive on EE, the National Council of Teacher Education (NCTE, 2005a) made an attempt to develop a curriculum framework in EE for the four levels of teacher preparation referred to earlier.

Environmental Education Curriculum Framework for Teachers and Teacher Educators (NCTE, 2005a): To make teacher education respond to the needs of creating environmental awareness in children, the National Council of Teacher Education (NCTE, in 2005, put forth before the country a comprehensive framework on environmental education for teachers and teacher educators at the four levels of teacher preparation, viz., Early Childhood Care and Education (ECCE), Elementary Education, Secondary

Education and Tertiary Education. The framework focused on including the meaning, scope and importance of EVS, its necessity for teachers, local environmental conditions, field work, simple projects, community and students participation in environmental protection, visits to zoos, museums, etc.

Curriculum Framework for Quality Teacher Education (NCTE, 2005b): Endorsing the need for Environmental Orientation for Elementary Teachers, this document re-iterated the following objectives of EVS in teacher education at the elementary level:

- To empower pupil teachers to impart instruction of unified and integrated subjects, their nature and purpose in the new education and social context,
- To develop holistic approach for understanding and solving the problems of life'
- To create environmental awareness with the objectives of its protection / preservation.
- To enable them to impart value education, life skills education, work education and feel their responsibility towards the education of the neglected sections of society including those affected by health problems.

National Curriculum Framework for Teacher Education (NCFTE, 2009): In congruence with the broad vision of school education portrayed in NCF 2005 and reflecting the significance of building environmental awareness and problem-solving in school children, NCTE recommended incorporation of pedagogy of environmental studies in teacher preparation. The document re-iterates that “in the present ecological crisis, promoted by extremely commercialized and competitive lifestyles, teachers and children need to be educated to change their consumption patterns and the way they look at natural resources. There is also an increasing violence and polarization, both within children and between them, being caused primarily by increasing stress in society. Education has a crucial role to play in promoting values of peace based on equal respect of self and others. The NCF and subsequent development of syllabi and materials provide a direction in this regard. For this, teachers need to be equipped to understand these issues and incorporate them in their teaching. The new teacher education curriculum framework will need to integrate these perspectives in its formulation”.

STATUS OF EVS IN SCHOOL AND ELEMENTARY TEACHER EDUCATION IN KARNATAKA.

In Karnataka, the Directorate of State Education Research and Training (DSERT), Govt of Karnataka and several NGOs have made efforts in putting EE in school and teacher education by way of reorienting the school textbooks to bring in environmental perspective, training of teachers, development and dissemination of teacher and student resource materials in EE, etc.

EVS IN KARNATAKA TEXTBOOKS AND TEACHER EDUCATION

Textbook Revisions: In standards 1 to 4, EVS is taught as an integrated subject with a separate textbook. The textbooks are revised in accordance with the affidavit each state filed in the Supreme Court and based on the 'EE model syllabus' of NCERT, New Delhi, approved by the Supreme Court (SC) in July 2004. In standard 5, the science textbook was divided into two sections – A and B. Section-A included science and Section-B included Environmental Studies (CEE, 2007). From standard 6 onwards, EVS is infused with science and social science subjects.

However, more recently, after 2010, the state is revising the textbooks once again. The new curricular policy is based on the guidelines of NCF 2005 and the 4 Pillars of Education, as outlined in Unesco's "Learning: the Treasure within" (Mudambadittaya,, 2011) and also to meet the stipulations of Right to Education Act (2009).

The textbooks, by and large, are also revised based on Yashpal Committee's recommendations 'not to burden children with the learning load'. EVS is introduced in standards 3 and 4 as ***Parisara Adhyana***. In standard 5, it is retained along with Science. Like the EVS books of NCERT (3 to 5) the Karnataka textbooks also cover a variety of concepts drawn from the child's environment – physical, social, geographical, etc. The lessons are thematically organized and are based on the pedagogical principles such as 'activity based learning' 'known to unknown' 'simple to complex' 'learning to do', etc. These textbooks will be introduced in schools from 2012-13.

EVS in In-service Teacher Education: Under a specially designed training programme "Chaitanya" for elementary teachers, in-service teachers are trained in interactive methodology of teaching environmental studies, languages and mathematics. However, there is no separate training module or course for training in-service teachers in transacting EVS.

CURRENT STATUS OF EVS IN ELEMENTARY PRE SERVICE TEACHER EDUCATION

Although EVS is one of the core study areas in classes I to IV, student teachers in Diploma in Education (D.Ed) course are not provided with any training in its transaction – contents, methodology and evaluation. In the existing two year D.Ed curriculum, there is no specific provision for EVS either in the theory or in the practicum.

In the first year, student teachers study 3 general papers and methodology of teaching first language with non-cognate subjects like Health and Physical education, Work education, Art/Music/Value education.

In the second year, student teachers study two general papers and two methods of teaching papers (English/Science or Social science and Mathematics) as options with other non-cognate subjects like Health and Physical Education Work Education, Art/Music/Value education. In addition to this, they also have to take up Computer Education and Action Research courses. As part of 'Multigrade' teaching practice, student teachers are only expected to give three model lessons using environment. This,

the student teachers do with the help of methods of teaching in science and social science, although EVS calls for an interdisciplinary, experiential and activity and problem-based learning. Other than this, there is no other orientation to pre-service teachers on the transaction of EVS concepts/themes, already introduced in the school curriculum.

Positioning EVS in Elementary Teacher Education: What has been presented so far - the policies and assertions on EVS, the on-going efforts in infusing environmental perspective in school education and the status of EVS in D.Ed curriculum - bring forth an explicit need for educating teachers at the elementary level in using environment as a medium of learning for children and in fostering environmental values, habits and practices for its conservation. These expectations put the elementary teacher in a very challenging position. There is, hence, a strong need for introducing EVS in D.Ed as a compulsory and foundation methodology paper in the first year.

Some of the factors which compel its inclusion as a core and compulsory methodology paper in the first year of D.Ed course are given below:

- EVS forms an important and distinct study area at the elementary school level.
- National Council for Teacher Education has recommended it as a compulsory paper at D.Ed
- Karnataka State has already introduced 'Parisara Adhyana' in elementary classes
- There is no specialized teacher at the elementary level to transact EVS. Teachers with varied disciplinary background handle this study area that too in multi-grade classes.
- EVS calls for using interdisciplinary, experiential and out of the classroom learning – specific methodologies of EVS. There is no specialized training on these exclusive methods in elementary teacher education.
- Learning outcomes in EVS include cognitive, affective and psychomotor domains – hence, the assessment for providing feedback has to be specific to these objectives and methodologies of teaching. Specific training on assessing these learning outcomes to provide feedback and to organize remedial learning experiences is very much needed.
- EVS calls for contextualizing the learning using immediate and local environmental and cultural examples, which demands adequate training.
- As EVS is a composite study area, it can be integrated with other school subjects. Trainees exposed to the contents and methodology of EVS in the first year can integrate it in the second year when they are practicing lessons in their specialized methods papers. This will be one of the main factors for its inclusion in the first year.

What would be the focus of such a paper in D.Ed?

Considered against several of the factors discussed earlier, EVS paper in D.Ed will serve in:

1. Developing sensitivity and understanding among student teachers for using the environment as a medium of learning for children:

The NCF 2005 recognizes the critical role of the environment as the context in children's learning. Children interact with their environment continuously. Everything in the environment attracts them. Children explore and experience different things in their environment, and derive meaning from them. This experience is unique to each child. The child continuously modifies this understanding as he or she further experiences /encounters new things in the surrounding environment. Thus environment provides the necessary stimuli for children to develop both physically and mentally. This initial experience of children needs to be considered, and expanded/integrated in the teaching-learning of environment, as it is within this concrete experience of children only that a real understanding of the environment can be developed. Thus the immediate environment of a child becomes an important medium of learning.

2. Educating primary student teachers in helping children:

- Connect with their natural and human made environment, understanding our dependence on the various components of environment (biotic, abiotic and human made); in other words, contextualizing learning experiences within the concrete environment of the children, enabling them to build connections/relationships and learn from the environment.
- Develop a holistic understanding of their environment. The thematic and integrated presentation of the contents in EVS in the revised textbooks (linking classroom transactions with children's immediate environment, etc), are all to support 'knowledge construction' and 'learning by doing' by children. It also supports developing in children a holistic or inter-related understanding of the environment from different perspectives (social, cultural, environmental, health, etc). Hence, transacting such integrated themes requires teachers to move beyond the boundaries of individual disciplines (their own subject specializations) and plan appropriate learning experiences to help children synthesize multiple perspectives and develop integrated concepts.
- Develop a multidisciplinary perspective to understanding of our environmental issues/problems and appreciate the impact/s of our daily activities on its integrity. In other words, planning and organizing learning experiences that would incorporate as many different forms of learning situations /experience as possible (social, cultural, physical, biological, etc) for children in working toward the desired learning objectives. This is clearly one more challenge to teachers in

the transaction of EVS as it requires the teacher to make a conscious shift from teaching to learning, particularly when the teacher, himself / herself, has learnt through a traditional approach of classroom teaching.

- EVS is more than just a 'subject area'. It is a learning process which is aimed to increase children's knowledge and awareness about the environment and associated problems/challenges, to develop the necessary skills and competencies to understand the dynamics of our interaction with the environment, and to foster environment-friendly behaviours. Environmental educationists greatly understand that 'knowledge about the environment' alone does not guarantee positive environmental action. This needs to be coupled with environment-friendly attitudes and values. What are these values in EVS that need to be developed in children? An understanding of such environmental values will help a teacher to plan and organize appropriate learning experiences for fostering and nurturing these in children.

3. Educating student teachers in planning, designing and organizing learning experiences based on constructivist approaches of teaching:

NCF 2005 demands that schools should help children construct knowledge while drawing upon their diverse living. The learning experiences are planned to provide enormous scope for children's knowledge construction. It would help children to make connections between their observations and experiences in their environment and derive meaning (new information /knowledge) or connect with their previous knowledge or which they have already mastered. Educational psychologists have shown that learning occurs most, only when learners process new information or knowledge in such a way that it makes sense to them in their own frames of reference (memory, experience, etc.) and learning will be more efficient when learners work in groups or teams.

4. Educating student teachers in organizing outdoor learning experiences:

L.B. Sharp's dictum "those things which can best be taught outdoors should there be taught" (quoted by Donaldson and Donaldson, 1958) has been accepted as a truism by environmental educationists. Sharp, his associates, and their followers have provided numerous examples of situations where in-the-environment learning was, or could be, more effective than about-the-environment learning in the classroom.

5. Educating student teachers in assessing EVS outcomes:

Teaching-learning in EVS encompasses a wide range of activities to help develop children's understanding and skills. Children construct their own knowledge of the environment and progress on their learning continuum at their individual pace. When such is the dynamism involved in children's learning, the question that crops up is, should all children be assessed at a single point of time and that too through a single

mode or tool of assessment. Considering the dynamic nature of children's learning, the NCF has emphasized the concept of dynamic assessment? It recommends use of a variety of methods of assessment – oral and written. The process of assessment becomes more challenging in terms of the Continuous and Comprehensive Assessment.

CONTENT, APPROACHES AND METHODOLOGIES OF EVS IN ELEMENTARY TEACHER PREPARATION

Environmental Studies III-V, based on the NCF, 2005, lists the following as some of the objectives of EVS.

- To train children to locate and comprehend relationships between the natural, social and cultural environment;
- To develop an understanding based on observation and illustration, drawn from lived experiences and physical, biological, social and cultural aspects of life rather than abstractions;
- To create cognitive capacity and resourcefulness to make the child curious about social phenomena, starting with the family and moving on to wider spaces;
- To nurture the curiosity and creativity of the child particularly in relation to the natural environment (including artefacts and people);
- To develop an awareness about environmental issues;
- To engage the child in exploratory and hands-on activities to acquire basic cognitive and psychomotor skills through observation, classification, inference, etc.
- To emphasize design and fabrication, estimation and measurement as prelude to the development of technological and quantitative skills at later stages;
- To be able to critically address gender concerns and issues of marginalization and oppression with values of equality and justice, and respect for human dignity and rights.

The above objectives not only provide a framework for planning and organizing learning experiences/situations at the elementary level but also for teacher preparation in transacting EVS. An attempt has been made in what follows to broadly sketch a framework of contents, approaches and methodologies for teacher preparation in EVS.

Content: The scope and potential of EVS will greatly diminish if it is regarded just like any other school subject finding its place in the time table. EVS is a synthesis of ideas, values, actions and skills from many disciplines that can be developed through all the subjects. Hence, its contents cut across the boundaries of sciences and social sciences and maths. This will be the essential perspective of EVS content.

EVS through its transactional methodologies is designed to help children explore, observe, express and wonder and introduce children to their surroundings. In this sense, EVS is just not a study area for primary children, but is more a training ground for

developing environmentally friendly attitudes, values, skills, habits and behaviours. One can describe EVS as a permanent investment in creating a sustainable society. Hence, the contents of EVS include learning experiences for helping children not only explore and understand their environment but also in:

- Developing positive attitudes, values and practices such as respect and care for all life on earth, compassion, caring for self and others, protection and conservation of natural resources appreciation of cooperative learning, sense of belonging, social responsibility, etc.
- Generating positive and proactive actions in improving the quality of the environment
- Promoting a conservation ethic and adoption of environment friendly practices and habits
- Appreciating the concept of interdependence in nature; the dynamic nature of environment linking individuals, their culture and the bio-physical world of nature.
- Valuing the importance of protecting and conserving natural resources for the needs and rights of future generations.

Thus, EVS integrates 'Learning in the environment', 'learning about the environment' and 'Learning for the environment'. Hence EVS's content is broad and ranges from using environment as a medium of learning to what one can do to protect and conserve it. Hence, the contents of EVS enlarge from all that a child's experiences in his/her immediate environment to the national and global (local to global), from physical dimension to aesthetic and political dimension.

Examined in the above context, the contents of EVS paper in D.Ed could include the following:

- Scope and significance of teaching EVS as an integrated or composite study area in school education
- Importance of Environment as a medium of learning in the early years of school education – psychological, philosophical, aesthetic and environmental advantages
- Values inherent in EVS transaction
- Curricular provisions, linkages and pedagogical principles of EVS – contextualizing, locale specificity, experiential, thematic webs and concept mapping,
- Approaches and methods
- Planning and management of EVS
- Assessment of EVS outcomes
- Resources and materials for transacting EVS

Approaches: As mentioned earlier, EVS involves organizing learning experiences *in, about* and *for* the environment, in trying to achieve its various objectives. Thus, EVS

deals with education that is intimately connected with the environment. These three approaches have been commonly referred to as: Education in the environment, Education about the environment and Education for the environment.

Education In the environment:

- Gives reality, relevance and practical experience to learning through direct contact with the environment
- Develops important skills of data gathering and field investigations
- Develops aesthetic appreciation

Education About the environment:

- Provides understanding of how natural systems work, appreciates the complexity and wonder of natural systems.
- Provides understanding of the impact of human activities upon these systems
- Fosters environmental awareness and concerns

Education For the environment:

- Develops an informal concern and sense of responsibility for the environment
- Develops the motivation and skills to participate in environmental improvement
- Compatible with the wise use of environmental resources

The integration of these approaches in EVS results in the much desired Education for Sustainability or Sustainable development, which aims at helping children develop a knowledge about their immediate environment – natural and social – and motivated to act for its protection and conservation.

Outside the classroom experiences: There are many ways by which classroom teaching-learning can be made more exciting and participatory. However, outside-the-classroom experiences provide an altogether different experience to children. "Outside" the classroom does not necessarily mean going far away; or it does always mean a trek or nature camp, although the value of these experiences cannot be under estimated. Properly planned, out-of-class experiences can help to enrich, vitalize and make EVS meaningful and realistic. They can provide the space for the development of several skills including observation, investigation, measuring, mapping, collecting data and analyzing it, critical thinking and problem solving. The teacher should be able to facilitate a process of self-learning in children rather than teaching; and the need for a different approach when working with 'out-of-school children'. Outdoor education draws upon the philosophy, theory, and practices of experiential education and environmental education.

Methodologies: "Education for the environment is a process of inquiry and action on real environmental issues. Such an inquiry process demands that students actively engage in critical or complex thinking about real problems. The development of knowledge, skills and values is not only directed towards action but emerges in the context of preparing for (i.e. the inquiry) and taking action" (UNESCO- UNEP IEEP, 1996).

The several objectives of EVS elaborated earlier call for a paradigm shift from conventional transmitting/teaching strategies to contemporary transformational strategies of teaching –learning including non-formal, interactive ICT and cooperative methods. Some of the teaching-learning methods used in EVS are listed below.

Classroom based methods- Lecture session, Concept mapping, Group Discussion Problem solving, Brain storming.

Outdoor methods- Observation, Critical thinking, Demonstration, Experimentation, Inquiry, Resource mapping, Games, Survey and interview, Field visits, Nature Trail, EE Action Projects.

Creative expressions - Debate, Arts and Crafts, Play building, Creative writing, Story telling, Role play, Puppet show, Teaching media and materials.

ASSESSMENT/EVALUATION

Periodic assessment/evaluation of learning outcomes helps in deciding the attainment of students in the subject area, suitability of learning experiences provided, learning strategies adopted and the appropriateness of the curriculum in general. In this regard, it is an integral part of curriculum construction and renewal process. In EVS, evaluation concerns with objectives in cognitive, affective and psychomotor domains and hence a teacher should make use of a range of assessment techniques for measuring these learning outcomes. The document 'Habitat and Learning' highlights this by stressing "since the development of appropriate attitudes, skills and values is to be the most significant component of EE in schools, developing a scheme to assess student's achievement on these aspects will perhaps be the most crucial in determining the success of interventions through the EE curriculum".

This brings forth the need for grounding student teachers in the use of various evaluation techniques by actually providing them with situations to understand and practice these techniques and tools as part of "continuous and comprehensive evaluation process" in EVS. This would help the student teachers understand the present learning levels of children but also how to use them in their day-to-day classroom practice.

This could be done by incorporating formative and summative evaluation techniques in D.Ed. Out of the entire period of two years of D.Ed course, 50% of the weightage can be distributed between both the techniques.

Based on the text and syllabus, written tests, exams can be conducted to evaluate one's understanding, perceptions, applied knowledge about the subject and the values which one committed for, could be done through summative evaluation.

In formative evaluation, apart from measuring the performance through the marks obtained ones' understanding about the surrounding environment, environmental concerns, observing best practices and processes can be assessed. This method can be applied to evaluate practice lessons, usage of innovative methodologies, experiments, group studies, brainstorming, observation, interviews, field visits, educating the mass/community etc., which establishes linkage with the immediate environment, and how they develop their perceptions and communication skills in the classrooms. This can help evaluate broadly inside and outside classroom learning.

The first year assignment of developing projects should be based on teacher trainee's immediate environment. It can be taken up by individual or by group. But it is desirable that the topic which they select should be such that they experience in their day to day life. For example, one can study the various aspects associated with a product like 'Dairy Milk' in the community – that is how dairy milk is collected, processed, transported and how it is associated with the social, economic and cultural aspects of peoples' life style. This can be done through collecting information by observation, interviewing people, field visits, analyzing the data etc. Through this students' performance/ efficiency can be assessed. Whatever the example may be, the attempt should be to enable the trainees to use a variety of assessment tools and techniques for a given activity and refine them through trials in their practice teaching sessions. The objective is that student teachers should understand the environment in its totality and appreciate the scientific, social, economical and cultural dimensions of the EVS theme and develop their own assessment tools and techniques.

RECOMMENDED ORGANISATION OF EVS COURSE

Based on what has been discussed so far, the following course structure is recommended by the Sub-Committee members for introducing EVS in D.Ed in Karnataka.

1. Content-cum-Methodology of teaching Environmental Studies should be introduced as a compulsory method paper for all the D.Ed., trainees during first year D.Ed course;
2. Total number of hours prescribed for teaching EVS paper should be around 80 hours in an academic year. (4 Teaching hours in a week ;
3. Contents of EVS should be linked with curricular themes in the EVS textbook;
4. Concepts of EVS must be integrated into science, social science and other school subjects in classes VI, VII and VIII;
5. Every teacher trainee should be insisted on using immediate environment as a medium of learning in their practice teaching sessions.

6. In the second year trainees should be encouraged to integrate EVS themes in their respective methods specializations.
7. In the practice teaching of EVS, pedagogical principles such as Known to unknown, simple to complex, local to global environment, contextualization, constructivist and activity oriented approaches, etc., need to be stressed.
8. Use of non-conventional teaching approaches such as performing arts, crafts, songs and dramas for organizing learning experiences need to be adequately emphasized.
9. In the EVS paper there should be more emphasis on outdoor /outside classroom education and field based activities. Content should only introduced basic concepts of Environmental Science.

10. Assessment Pattern :

Weightage for theory and practicum

Theory - 50 Marks

Practicum - 20 Marks

Projects - 20 Marks

Assignment - 10 Marks

Total - 100 Marks

11. Out of 80 hours of work load, 40 hours can be utilized for teaching theory and the other 40 hours can be utilized for practicals, outdoor activities, field visits and Guidance of practicum and projects.

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