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Challenges in Understanding and Transacting Contemporary EVS Textbooks

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ABSTRACT

Understanding that young children perceive their surroundings holistically and to reduce the curriculum load for them, the National Curriculum Framework (NCF) 2005 based on the National Policy on Education 1986, recommends Environmental Studies to be taught as an integration of Science, Social Science and Environmental Education at the primary stage. It exists as a separate curricular area from Classes III to V. However, at Classes I and II the related concerns are addressed through language and mathematics. The textbooks developed on this depart from the traditional approach and demand considerable changes from teacher-centric to learner-centered teaching-learning giving primacy to children's voices and their past experiences and mould/ devise the strategies based on their responses. The approach has been accepted and implemented by most of the states and UTs across the country. Many of them have adopted/ adapted the NCERT textbooks in Environmental Studies based on NCF-2005. In order to understand the gaps and challenges in transaction of these books, field visit to a government school in New Delhi was undertaken for a period of three months. To understand the gaps between intention and transaction of EVS, observations of teachers teaching EVS were made and the author (who was part of the curriculum development of EVS) herself taught some lessons. The article, based on this field visit experience, compares the transaction of EVS by a qualified and trained teacher to that of the author to understand the gaps in development/ transaction of EVS curriculum in order to come up with the strategies to bridge them appropriately.

Introduction

The National Curriculum Framework 2005 views Environmental Studies

(EVS) in Classes III to V as a subject which integrates the concepts and issues of science, social science and

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environmental education. Before 2000, it was taught in two distinct parts, science and social studies in Classes III–V. An integrated approach for EVS curriculum was adopted by NCF 2000, wherein, it recommended that in Classes III–V, children would be introduced to the environment in its totality with no clear-cut distinction between natural and social environment. This was reflected in the syllabus in Classes I and II, it was not kept as a curricular area and environmental concerns were addressed through language, mathematics and Art of Healthy and Productive Living. However, in 2005, a new paradigm was proposed by the position paper on Habitat and Learning that envisions generation of knowledge among children with a capacity to think critically emphasising learning. To do so, NCF–2005, recommends EVS as a core curricular area and a separate subject from Classes III to V and accordingly, syllabi and textbooks have also been developed.

EVS Curriculum at the Primary Level: The Shift

Despite that, EVS is to be taught with an integrated perspective by NCF–2000, the syllabus and textbooks were devoted distinctly to science and social studies. Recognising that children construct knowledge in a holistic manner, the approach in EVS, as per NCF–2005, involves the use of thematic approach, wherein, the themes such as Food, Water, etc., reflect science, social science and issues of environment

holistically that strengthen the integrated approach as envisaged by NCF–2005. In Classes I and II, as well, the environmental concerns are to be integrated with teaching-learning of language and mathematics. Besides, the NCF–2005 recommends departing from rote bookish learning which causes a gap between home, school and community. It recognises that given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by the adults.

Field Visit: Some Details

In order to understand the transaction of EVS in the manner envisaged by NCF–2005, a field visit to a government school was undertaken for three months. The classroom observations and informal interactions with the teachers and students in EVS classrooms were made. The author (was part of the EVS curriculum development) also taught some lessons. Field notes were regularly recorded and the qualitative data was analysed to understand the gaps in intention and transaction of the EVS curriculum.

The NCERT textbooks of EVS ‘Looking Around’ were being used. A mother teacher (who taught all subjects) taught EVS to 32 children of Class V. She had been their teacher since Class I. Children were using the English version of the textbooks but the medium of conversation was mostly Hindi with occasional use of English words. The teacher was qualified and

had undergone in-service training on NCF-2005. She was familiar with the guiding principles of NCF-2005.

There is a gap between intended and transacted EVS curriculum, as seen in the transaction of a chapter (Chapter 11, Sunita in Space, Class V EVS textbook, NCERT, 2008).

The following are some details of the classroom observations (Approach X) of this chapter in EVS classroom.

Approach X: The teacher mentioned definitions of a star, planet and satellite on the blackboard and asked children to note down and memorise them. Thereafter, she conducted some activities given below.

Questions	Key Concepts/ Issues	Suggested Resources	Suggested Activities
Ride in a Spacecraft			
<p>What all do you see in the sky — at daytime and at night? How many of the things you see in the sky are manmade?</p> <p>Have you heard of people travelling in a space craft?</p>	<p>The sky in the day and night.</p> <p>Basic exposure to the aerial view of the earth and what India looks like from there.</p>	<p>Story of Rakesh Sharma/ Kalpana Chawla</p>	<p>Observation from a terrace to draw its aerial view.</p> <p>Imagine yourself in a spacecraft giving an interview to the PM about what you see from there!</p>

EVS Curriculum: Understanding the Intention and Transaction

‘Sunita in Space’ is based on the theme ‘Travel’ in the NCERT syllabus document (page 133) at the elementary level.

The chapter deals with exploring children’s ideas about earth, space, our position on earth, through observations of the sky and globe, observations of the pictures of astronauts in space and reading about their experiences, how things fall on earth and float in space through interaction with peers/ teacher, etc.

Activity 1

The teacher made one child (A) stand in front of the class and asked another child to revolve around him. She asked children to assume the child at the centre as Sun (a star) and the child revolving around the first child as planet. After that she asked two to three children to revolve around (A) and told children that the planets can be more than one. Thereafter, the teacher wrote names of the nine planets revolving around the Sun on the blackboard and asked children to copy the same and memorise them in a sequence.

Activity 2

To introduce satellites, she repeated Activity 1 with another group and this time asked children to assume the child at the centre as a planet and the child revolving around him as satellite. She gave example of the Earth as a planet and the Moon as its satellite.

One of the children asked — *Kya Chand, Dharti ke aass pass ghoomta hai?* (Does the moon revolve around earth?)

Teacher— Yes. You might have seen that the position of moon at night changes. *Aisa isliye kyonki yeh Earth ke aass pass ghoomta hai* (It is so because it revolves around our Earth).

Activity 3

Next day, the teacher took children to the school ground and asked them to observe their shadows. She made postures of hand and children observed the shadows. The children imitated her. Later, she asked them to draw the pictures given in the chapter.

Some Observations on Approach X

The chapter ‘Sunita in Space’ was used to teach about the celestial bodies like stars, planets and satellites which were completely delinked from the syllabus and eventually the activities conducted were also unrelated. The activities appeared to be irrelevant and completely lacked the purpose and intent as one child encircling another, in no way conveys any idea about satellites/planets/stars. There was no

active and meaningful involvement of all children. The teacher was also not clear of the objectives of conducting the activity on shadows. This was related neither to the syllabus/chapter nor any attempt was made by the teacher to link them with the concepts taught. The EVS transaction completely ignored the NCF–2005, where children were passive receivers and the teacher appeared to have lacked comprehension of the aims, objectives of not only the chapter ‘Sunita in Space’ but that of EVS as well. On probing she mentioned that the chapter does not have much content and she taught students with her own understanding.

The next day, I (the author) planned to teach the same chapter with children (Approach Y). Their EVS teacher was also watching.

Day 1

I brought a globe to the classroom and initiated discussion with children.

- Children, what do you see in the sky during day and at night?
- Children—Ma’am, *din mein hamein Sooraj dikhta hai aur raat mein Chand aur Sitare* (We see the Sun during daytime and the moon and the stars during night).
- Very good. Have you heard about space?
- No, ma’am.
- Okay. Have you heard about Sunita Williams?
- Children started thinking, some of them nodded.

- Alright. Have you heard about Kalpana Chawla?
 - Children replied in chorus—Yes, Ma'am.
 - Who was she?
 - Ma'am, *woh Chand per gayee aur wahin rehne lag gayee* (She went to the Moon and lived there only).
 - *Achaa. Kya tum jante ho ki Chand per aur hamare beech mein kya hai?* (Okay. Do you know what exists between the Moon and the Earth?)
 - No reply.
 - It's Space. *Space kya hai aur Earth se kitna door hai hum is per baat karenge* (We will talk about what space is and how far it is from Earth).
 - The next moment, I pointed towards the globe and said—*Yeh hamari Earth ka model hai. Ise globe kahte hein* (This is a model of the Earth and we call it as globe).
 - Ma'am, *yeh ghoomti rehti hai kya?* (Does it keep revolving?)
 - Yes.
 - Then, I asked—*Hum is per kahaan rehte hain* (Where are we on this Earth)?
 - Children were silent.
 - If this globe is our Earth, are we on it or inside it?
 - Children—Ma'am, we are inside this.
 - Why?
 - Children—Ma'am, if we are outside then we all will fall down.
 - Ok, but what do you see when you look upwards in the open?
 - Ma'am, we see the sky.
 - Will it be possible to see the sky if you are inside this earth?
 - No Ma'am.
- To my surprise, one child mentioned that she had seen gases and smoke coming out from a volcano on television and said that the Earth is very hot from inside. She said it was difficult to stay inside the Earth due to intense heat. But other children asked:
- But Ma'am, *fir hum neeche kyon nahin girte?* (Why don't we fall down)?
 - Children, have you ever tried to throw something upwards like a ball, etc. Then it goes up and comes down after that. What do you think about it?
 - Ma'am, *Earth mein chumbak hai. Yeh hamein apni aur khinchtee hai* (The Earth has a magnet which attracts us).
 - Hmm.
 - Param—Par Ma'am, *mera diwali wala rocket to oopar hee jaata hai* (My Diwali rocket only goes up).
 - Seema—*Lekin jalane ke baad neeche hee to aata hai* (But after burning it falls down).
 - But Ma'am, *asli rocket to neeche nahin aata?* (But Ma'am, a real rocket does not fall down).

I appreciated their responses and queries and told them that if an object goes out with a greater force than the Earth can pull it down then it will leave its surface and enter the space.

- Okay. Now, we are in New Delhi, try to find out our position on this globe (I called 3–4 children to see that). They struggled for some time but found New Delhi. We marked the position. Then, I asked different groups them to name and locate some other places. Children said— Kanpur, Mumbai, Nepal, USA.

Later, one child said:

- *Arre USA ke log hamse ulti disha mein hain* (Those in USA are standing upside down in opposite direction to us).

Another child:

- *Aur jab Earth gol gol ghoomti hai to log girte bhi nahin* (and they do not fall when the Earth revolves). *To woh isliye na ki earth hamen apni aur kheench ke rakhti hai* (It is because the Earth attracts us to itself).

I was quietly listening and appreciating their discussion and observed that children wanted to play with the globe. I divided them in two groups and one group named a place and counted twenty whereas the children from the other group were supposed to locate the place on the globe in that much time. On losing, they exchanged turns.

That day I asked children to go to the terrace of any building during day time (if possible), observe the view

below and express that pictorially and to repeat the same process at night to draw the view of the sky.

Day 2

Next day, most of the children did so and I allowed each one to show his/her work to the whole class. I collected the sheets, wrote my comments appreciating each one and hung them all on a string in the classroom. Later, I drew their attention to the picture of the Earth (page 105 of the textbook) taken from space and asked them to identify India in it.

They said that Ma'am, this does not have lines like we have on a globe. What do the lines indicate?

These lines only help us to differentiate one country from another.

- Very good, children! Yes, Humans have done this division of Earth into countries and states, etc. Why do you think it has been done? Try to express your ideas in a few lines/through drawing.

Next day, I asked children to read Sunita's experiences of living in Space (mentioned on page 101 of the textbook of Class V) before we discussed. One child asked:

- Ma'am, how far is the Space?
- It is more than 300 km from Earth. Do you know how far is 300 km?
- Ma'am, *bahut door hoga. Kai din lagte honge pahunchne mein.* (It must be quite far and might take many days to reach there.)

None of the children had an idea.

I asked—Have you been to Chandigarh or Jaipur?

About four to five children had gone. I said—whatever distance you travel in going there and if you travel some more distance than this, in the upward direction, then we may reach Space. However, still many children found it very difficult.

Day 3 and Day 4

In order to help them understand this, I decided to involve children in activities of measurement. With their scales they all measured the length and breadth of their EVS textbook and then calculated the perimeter. I divided them into groups of five children each and asked each group to bring measuring tapes the next day. I took them out to their playground the next day and helped each group measure the perimeter of their playground. There were some variations between a range of 1.2 to 1.4 km. We discussed that if you complete around 300 rounds of your school then that much distance travelled upwards will take you in Space where Earth will not be able to attract things with the same force. All children were very excited by now. We continued our discussion on the third day. I asked them to observe the pictures of Sunita in Space (on page 102) of the textbook. All of them were quite astonished to see how all objects, food and people were floating in the picture. I asked them if they could think on it.

One child—Ma'am, because Earth is not there to pull them down.

We did an activity when they closed their eyes and I asked them to imagine that they were in a spaceship revolving the Earth and asked:

- How do they feel?
- Are they able to stay at one place?
- What is the direction of the hair?
- Where are their bags and books going?
- What is the teacher doing?
- How is she writing on the board?
- How will you eat your food?

They all laughed and enjoyed. When they opened their eyes I asked:

- Can we now think of how a ball thrown up on Earth comes down?
- Why water flows down the hill and not upwards?

Children raised many questions such as—what happens on the Moon and the Mars, etc. I encouraged them to think about it and find out from their elders. I also suggested some sites on internet and books from the library to them.

Some Observations on Approach Y

I asked the teacher about her opinion on this. She expressed that there was no rigid planning for the transaction of the chapter and the plan was evolving as the teaching-learning progressed based on children's responses and understanding. She said that all children participated very actively in the teaching-learning

process wherein they worked hands on, both inside and outside the classroom. She also mentioned that not only mathematics, but art and language were also beautifully integrated. On asking about science/ social science issue she opined that science, social science and environmental issues were not dealt in isolation and the integration did not even appear superficial but was naturally reflected during teaching-learning. Attempt was also made to sensitise children about the conflicts among nations/states for land and boundary. She noted that the transaction did not seem to be an activity imposed on children but probing children's ideas and gradually building upon that helped them to learn and progress joyfully.

EVS Curriculum: Addressing the Gaps and Challenges

We discussed the issues informally on different occasions and I sought her suggestions on how the gaps could be addressed. Following were sieved out of the discussion, which, according to her, needed to be considered in order to implement EVS as per the approach envisaged under NCF-2005.

- It is difficult to comprehend and plan teaching-learning in the desired manner from the existing text in the EVS books. Only a demonstration in real life classroom can help teachers understand the approach.
- Some chapters are very lengthy in Class IV and V EVS textbooks. These need to be written in a simple language as students find them difficult to comprehend.
- Teachers hardly have any access to the syllabus. It is difficult to establish link between the syllabus and the chapters included in the textbook as neither the title nor the content depict this clearly.
- The rationale for the sequence of chapters in EVS textbooks is also not clear. For example, the first chapter is on 'Senses' and the second one is the story of a 'Snake Charmer' whereas the third one is based on food entitled 'From Tasting to Digesting'. There is an abrupt shift from one topic to another.
- Appropriate resource material (some exemplar good practices) to understand this process was required. Some video clippings of the classroom transaction can be very helpful.
- Concerns for the safety, security and management of children prevent us from taking them out of the school/classroom. Cooperation from the authorities may help in this direction.
- The in-service trainings are mostly theoretical and lecture-based and away from the ground reality. The orientation/capacity building programmes need to be done in real classroom situations.

- Flexibility needs to be there in the system to let the teachers plan teaching-learning in a desired manner. Provision may be there in the daily timetable/school calendar to extend activity(ies) as per the need of the learners.
- Coordination between teachers and teamwork can also help.

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