

Textbook Analysis: EVS for Class V

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Overview

Here is an analysis of the textbook for the subject Environmental Science, for class V. This edition of the book was brought out by NCERT in 2008. The macro-level organization of the book shows familiar elements like the Foreword, Acknowledgement, Textbook Development Committee list and Table of Contents. The book also has additional elements like a Children's Bill of Rights, and a detailed note for teachers and parents. This 4-page descriptive note details the book's intent, content and a brief explanation of the methods. This note is significant in that it sets the tone of how the learning of this particular subject will take place.

The organization and content of the textbook reflects the elements of the NCF 2005 framework as described in the position paper on Curriculum, Syllabus and Textbook. The most pertinent shift visible is that of moving from textbook to 'teaching-learning materials', as is evident from the examples given later in this paper. This paper also discusses what the textbook implies learning to be like, its underlying principles and objectives, local knowledge, curriculum integration, pedagogic sites and teacher expectations. In addition to the above, this paper also analyses sociological aspects of the textbook with reference to depiction of caste, class, gender and religion.

How is Learning Implied in the Textbook

A detailed study of a few lessons, including a quick scan of the entire book reveals five prominent characteristics amongst others:

1. Steers clear of rote learning:The content of the textbook steers clear of any and all forms of rote learning. The textbook mentions facts and concepts very sparsely, if any at all. The content of learning is expected to be 'generated' only through children's thinking. And this leads to the second most prominent characteristic of this textbook described in the next point.
2. Encourages child's thought and intuition:The textbook encourages children to observe and think, and supports the development of their own reasoning about common, day-to-day occurrences with the help of teachers. The textbook allows and supports the use of children's intuition in making meaning of complex concepts. An example would be a question like 'Why do people in the southern hemisphere not 'fall off' the earth's surface'?
3. Equal balance of group and individual activities:The textbook blends in an equal balance of collaborative and practical hands-on activities. For example, an activity that requires children to observe how quickly ants appear after you scatter a little food. Individual sit-down tasks like 'Write a short report on people, like snake charmers, who depend on animals for their livelihood' are also found in equal measure.
4. Graded complexity of concepts:The textbook begins with simple, everyday problems and occurrences that all children usually encounter, such as how dogs react to sudden noise and gradually progresses to more complex, unfamiliar surroundings like a fort or even outer space.

5. *Moral and emotional tone of concepts:* The activities are not purely clinical observation-based. They encourage the child to feel an emotion, think about the aspects of justice, in a manner that is suitable and appropriate for the age of children studying this curriculum. For example, a discussion on an impoverished rice farm worker who does not have enough to eat despite working hard in a rice field, I feel generates a sense of empathy as well as directs the child's attention toward moral aspects of the situation.

The characteristics listed above indicate that the EVS curriculum encourages the child to appreciate, be sensitive, and have a keen awareness of her surroundings. The emphasis is not to learn definitions or concepts by rote but to arrive at the meaning or to understand the surrounding environment through the thought processes of observation and thinking which may be guided by varied activities and/or experiments.

Overall Approach to Organize the Text

The approach visible in the textbook (and described above) is built on the foundations of Mayer and Kohlberg's progressivism, which states that:

1. 'The child's 'natural interaction' with the external world – the society or the natural environment should take place in a manner that attempts to resolve genuine problems or conflicts'.
2. 'Educative experience makes the child think—think in ways which organize both cognition and emotion'

Through its various thought provoking stories, activities and observation tasks, the textbook represents aspects of progressivism by weaving together conflict, the idea that 'educational environment that actively stimulates development through the presentation of resolvable but genuine problems or conflicts'.

Examples

Aryanath's Story in Lesson 2: Aryanath's grandfather is a snake charmer who earned his living by domesticating snakes. The story explores the snake charmer's profession, their usefulness in the society at one time – both for saving lives and for entertainment and their subsequent decline due to modernization. The aspects of environment, local knowledge (use of snake venom as medicine) and local culture (the *kalbelia* dance, the *been*) and the issue of animal protection is seamlessly woven into a single story. The story can serve as a one-point, single springboard for the teacher to touch upon a host of environmental issues and problems.

Water Scarcity in Lesson 6: Another example that supports progressivism is through the presentation of a real-life shortage of water and linking it to daily life. Questions around the use and supply of water, the Government's role in providing clean and potable water, its acute shortage in villages is dealt with in a 'problem' way. Children are required to discuss water problems and deep dive into the issue. The lesson also covers a success story of a lady called Darki Mai from Rajasthan – her struggle and eventual success with water shortage in her village.

While progressivist thought forms the foundation, the design of the textbook also reflects Dewey's belief that "children are inherently active, with strong impulses to investigate, to share with others what they have found out, to construct practical things, and to create." (Tanner) The child's activities would ultimately lead to "the set of facts and principles known as science, history, and

literature—bodies of systematized knowledge.”This is evident from the number of activities present in the textbook.

Integration in the Textbook

This textbook shows clear signs of theme-based integration. The section ‘Note for Teachers and Parents’ describes the thematic organization as:

- a. Family and friends (has sub-themes)
- b. Food
- c. Water
- d. Shelter
- e. Travel
- f. Things we make and do

Pring talks about four philosophical methods of integration of a curriculum – through subject matter, theme-based, through practical thinking and through learners’ own enquiry. As such, the integration that can be seen in this textbook does not strictly correspond to any of the models described by Pring. Pring’s theme based integration speaks of a single theme around which a curriculum can be organized – such as ‘Revolutions’. The theme-based integration shown in this text book has multiple themes – related to the larger theme of Environmental Science – each theme having a small number of chapters within it.

Incorporation of Local Knowledge and External (external to the classroom) Knowledge

The textbook considers both local and outside knowledge. Having said that, it is important to note that given the diverse and highly heterogeneous demography, local knowledge in one state or region may serve as exotica for another. What this means is that a for a child in Andhra Pradesh, the study of the Golconda fort (Lesson 10 – Walls Tell Stories) may serve as local knowledge, but the same may be very far removed, although necessary for a child in Assam. The textbook tries to overcome this diversity by ensuring that as many states are covered:

Here are some examples of local knowledge:

1. Lesson 3 – From Tasting to Digesting: The reference to tamarind (*imli*) and the how young children enjoy it is a good example of situating knowledge outside the classroom. It is an experience that most children would have had. To start a lesson with this discussion is a good example of outside knowledge.
2. Lesson 4 – Mangoes Round the Year: This lesson talks about mangoes and its varied uses in the context of how it gets preserved in different regions of India in the form of pickles, jams etc. The lesson goes on to narrate in a story-form the recipe of a mango preserve popular in Andhra Pradesh called ‘mamiditandra’. How the mango is cooked, dried, preserved binds old wisdom, not documented any particular place, and is shared here. This is a good example of local knowledge.

- Lesson 13 – A Place So High: This lesson includes a fair amount of local knowledge about life in high altitudes, in a story format. The story talks about how tents called *Rebo* are made using Yak hair, their structure which suits the environment. The use of the walls of the *Rebo*, the specific methods to keep count of the animals that each home owns, all constitute local knowledge.

The textbook also includes a host of stories about people in different parts of India – be in Gomti, a woman who works in a rice field in Kalahandi, Orissa or Suryamani, a girl from Jharkhand who went on to study hard and earn a B.A. degree. Though these stories have different messages, the contexts of these stories are rich with local knowledge about those contexts.

Pedagogic Sites

Learning is not restricted to a classroom or to contents of the textbook. It is rather, a sum of all experiences that are a part of everyday life. The textbook, in alignment with this tenet, has plenty of references to such experiences – either through discussions, through stories or through activities.

While the book does not give specific mandates for museum visits or field trips, through discussions and activities it connects the learning to the outside world. In that sense it can be said that the book has references to several pedagogic sites. The most common references are made to children’s homes, which can be called a pedagogic site. The home as a pedagogic site is significant in that it helps children see that knowledge is seamless. What is learned in schools is not something exotic to be overwhelmed with. For example:

- Lesson 19 – A Seed Tells a Farmer’s Story: Through a discussion on seeds and grains, the teacher connects what is eaten at home to what is taught in the lesson. The home (and the kitchen) serves as a pedagogic site here.
- Lesson 10 – Walls Tell Stories: As stated above, the textbook does not prescribe field trips, but provides opportunities for the same if the teacher or the school has the wherewithal for such occasions. This lesson talks about a small group of children discovering the wonder of the Golconda fort in Andhra Pradesh. The discussions that follow urge children to discover or explore their local surroundings to look for monuments. This is an extension of the classroom where the surroundings are used as a pedagogic site.

Under a Sociological Lens

The textbook comes a far distance from earlier counterparts in making sure that it includes a cross section of the society in terms of geography, class and gender. The book does not overtly mention castes unless necessary and does so in a natural way. The textbook also does not resort to stereotypes of class and gender – such as showing a city boy in good clothes or a rural child as skinny. In fact the textbook makes an attempt to include stories and discussions that involve the changing (or to say, already changed) role of women in the society be it in terms of Sunita William’s travel to space or the story of Suryamani – a young woman in Jharkhand.

It would do well for the teacher to point out that though both Sunita and Suryamani represent very different social class – the agency of women that operates across the spectrum is common. The slight

difficulty here is that children (girls) should see themselves as belonging to this spectrum and not feel alienated.

Some examples that stand out are the inclusion of a lesson on girls in sports (Lesson 17 – Across the Wall) and a lesson on ‘Girl Stars’ (Lesson 20 – Whose Forests).

On religion and caste:

Naming of children who appear in the textbook show that all 4 major religions of Hinduism, Islam, Christianity and Sikhism have been included. There are no references to other minorities like Parsis.

On Gender:

While women have been shown as achievers in their respective fields, there are plenty of images that depict women who are working in the field, at home (always cooking), outside the home, looking after children. A large image on page 149 that stands out shows ‘work being done’ – where all the work depicted is done by women clad in saree and in traditional garb. Women are shown sweeping the street, shopping, cooking, teaching, selling vegetables, nursing, in laboratories etc. A balance here would be welcome – for example, depicting a father holding a child or feeding a child instead of a mother would be more inclusive.

On Class:

Even though the textbook steers clear of mentioning any examples or situations that point to urban, upper class demographics it does not come across as favouring or representing a particular demography.

Framing and Teacher Expectations

The textbook content comprises of a host of activities and stories/narrations. While the concepts to be covered are obvious, the approach is fairly flexible suggestive of weak framing. The activities and stories are the main material the teacher has to cover but the pace and sequencing seem to be left to the teacher’s choice. The lack of prescriptiveness is evident from the fact that the teacher does not need to cover concepts that will be ‘tested’ for at the end of the chapter through questions.

That the degree of framing is weak is evident from the type of activities. Some of them involve some form of simple experiments like watching how ants appear when food is dropped on the floor. The progression of the class is then based upon how children respond to the discussions.

Each chapter in the textbook has footnotes which carry suggestions for teachers. In addition, the book does carry an implicit expectation for the following:

- a. Teachers will be diligent in helping children carry out the activities and ensuring that each child participates in those activities and in the discussions that follow
- b. Teachers will need to allow for a flow of different ideas and engage with the questions that children may have. She may need significant skills in analysing questions that come her way and using scientific thought in answering them. For example she would need to know why ants gather food for the winter or why people in the southern hemisphere do not ‘fall off’ the surface of the earth.
- c. Teachers are expected to be able to give balanced, socially responsible responses to some of the more contentious problems posed in the text book. For example, the lesson on senses has this

one example where a lady with a six month old child calmly changes her own child's diaper but when she has to change her sister's child's diaper, she wrinkles her nose because of the smell. This is a sensitive problem and needs a certain amount of wisdom to deal with.

The teacher needs to keep in mind that this textbook serves as a preparation for the next year's curriculum of Science. So knowledge of concepts and a development of scientific temper need to be paid attention to.

Conclusion

The NCF 2005 position paper on Curriculum, Syllabus and Textbooks emphasizes two tenets, amongst others, that children construct their own knowledge and the importance of experience in learning. This textbook serves both these. The textbook provides opportunities for experimentation, hypothesis formation, logical derivation, sharing of ideas and exploration.

As such this textbook contains the elements that will prepare the child for studying the subject of Science in the next class.

References

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