The study in retrospect

This section presents the study in retrospect, the major findings, conclusions and suggestions, the implications of the study and a few suggestions for further research in the area.

It is of paramount importance to create a kind of love and concern for environment in young minds so that they grow up with an awareness that would lead to action. This calls for an environment oriented education programme with examples of regional endowment for better understanding of environment. What remains less apparent is the knowledge about the textbooks, which is serving the role of increasing children’s environmental awareness. Therefore, the study is entitled as “A Content Analysis of Environmental Education textbooks of Primary stage in Schools of Rajasthan”. In the Indian situation, the textbook continues to be the most potential aid in the hands of the teacher and the learner through which the given curriculum is transacted. Textbooks have a unique role to play in environmental education for imparting education focusing towards an integrated sustainable development. However, empirical studies assessing the textbooks of environmental studies are in scanty. The major aim of the present study is to identify the extent to which the textbooks of primary stage conform to the guidelines given by NCERT along with the identification of the appropriateness of the content matter, illustrations
and activities. This thesis reports the results of the study and also helps to provide feedback to existing textbooks.

**Objectives of the Study**

The scope of the study envisages the following objectives:

1. To find out the extent to which the themes and sub themes recommended by NCERT have been introduced in textbooks of Environmental Studies Primary stage (especially grade III to V).

2. To find out the suitability of the content matter, illustration, activities and items of practice exercises of textbook of Environmental Studies of Primary stage.

3. To suggest measures for improvement of existing textbooks of Environmental Studies of Primary stage.

**Methodology in brief**

**Research Design**

In order to achieve the objectives of this study, the *I.K. Davies* matrix method of content analysis was adopted, as it was considered to be the best to get the data. According to this technique, content is first of all divided into sub topic(s) which infer some meaning and discrimination form each other in sequential order and then each sub topic is divided into elements following sequential order.

**The Sample for the Study**

Simple random sampling technique was adopted to select a representative sample from the above population because of the homogeneous nature of the population. Jaipur city was selected for obtaining representative sample and it was obtained by using following formula:
\[ n = \frac{NZ^2 \times 0.25}{[d^2 \times (N-1)] + [Z^2 \times 0.25]} \]

\( n = \) Required sample size
\( d = \) Precision level (i.e. 0.05, 0.01, 0.10 etc.)
\( Z = \) Standardization value indicating a confidence level
\( (Z = 1.96 \text{ at } 95\% \text{ confidence level and } Z = 2.56 \text{ at } 99\% \text{ confidence level}) \)
\( N = \) Population size (Known or estimated)

Sample size was calculated at 95% confidence level and 5% precision level (\( d = 0.05 \) and \( Z = 1.96 \)) for estimated population size of 8634.

\[ n = \frac{8634 \times (1.96)^2 \times 0.25}{[0.05^2 \times (8634-1)] + [(1.96)^2 \times 0.25]} \]

\[ = 368 \]

The obtained sample size were dichotomized into Government and Private school teachers as shown below:

<table>
<thead>
<tr>
<th>Number of primary school teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Primary School Teacher (184)</td>
</tr>
</tbody>
</table>

Tools of the study

The result of research depends upon the quality and appropriateness of the tools used. Since the undertaken study is purely a qualitative analysis of the textbooks so to verify the findings of analysis, Teacher’s Feedback scale was developed by researcher to seek the information regarding different aspects of textbooks from school teachers teaching Environmental Studies.
The scale developed covers following areas upon which it is developed:

1. Objectives suggested by NCERT for the textbooks of classes undertaken for study.
2. Themes/sub themes recommended by NCERT for the development of textbooks of class undertaken for study.
3. Diagrams given in the textbooks of grades included in study.
4. Examples given in textbooks of grades selected for study.
5. Syntactical & printing aspects of textbooks of different grades.
6. Nature of content used in the textbooks of grades chosen for study.
7. Practice exercises of textbooks of grades selected for study.

Data Collection

Data for the study were collected in two ways:

(i) From analysis of textbooks.
(ii) From Teacher’s feedback.

Analysis of Textbooks

Data were collected by analyzing textbooks of the grades taken in hand. For this purpose according to the essence of study, different tables were devised. The details of the tables are given below:

(1) Table I – Evaluation of Themes (Appendix-I)

This table was developed for analyzing texts of the textbooks of concerned grades. The table was developed by taking into account the themes and sub themes suggested by NCERT. These themes and sub themes suggested by NCERT for grade III – V were coded for convenience (Appendix–Ia, Ib, & Ic).

(2) Table II – Evaluation of diagrams (Appendix -II)

(3) Table III – Evaluation of examples (Appendix -III)
Major findings

The major findings emerged from the content analysis of the textbook of environmental studies are presented below:

1. Even though guidelines for the development of textbooks were available, educationist/experts who were assigned the responsibility of writing textbooks did not follow the guidelines scrupulously. For grade III, number of sub themes suggested under four themes by NCERT are 25. Nevertheless, textbook of grade III includes only fifteen sub themes. Similarly, fourteen and thirteen sub themes are included in the textbooks of grade IV and V despite of recommended twenty nine and twenty eight sub themes under four themes respectively.

2. Texts are presented purely in running form in textbooks. By and large, chapters are discussed in descriptive manner with scanty numbers of activities and examples. If somewhere it is used, no separate section is assigned to it. Systematic presentation of text in logical manner is main concern, which is not taken seriously while writing these textbooks. It would have been better if examples and activities were given in every chapter in separate sections form the environmental endowments of Rajasthan if possible.

3. Diagrams are one of the weakest aspects of these textbooks. Diagrams used in textbook are undersized in almost all the chapters. Clarity, labeling and colourfulness are the main concern where these textbooks fall short.

4. Proofreading along with printing is another aspect where these textbooks fall short, as syntactical and printing errors are causing confusion and altering the meaning of sentences.
5. Language of text is easy but in many chapters, it is disparately organised.

6. Conservation of environment and its related aspects are to be addressed in a comprehensive way in order to strengthen the resource base of our traditional system. It would have been better if such element were also included in the textbooks of environmental studies.

7. Questions of practice exercises are mostly knowledge based. It would have been better if questions were in definite proportion from all the major aspects i.e. Knowledge, Understanding, Application, and Skill.

   A closure analysis of the environmental studies textbook from grade III to grade V convinced the investigator that on the whole there are some lapses in the coverage and treatment of some aspects concerned with the environment. It is found that some of the essential aspects of conservation and sustainable utilization have not been included in these texts. The lapses thus identified are presented below:

1. Activities
2. Biological diversity
3. Care and protection of environment
4. Conservation
5. Economic Importance
6. Local contextuality, indigenous knowledge, experiential learning strategies, multi-disciplinary approaches, project based methods and action oriented practicals.

7. Indigenous and traditional knowledge about the protection of environment.

Analysis of Teacher’s Feedback

To get the profile of teachers on textbooks, their responses on self-made feedback scale were collected. Statements were included to find out their perception about the quality of textbooks particularly with reference to age,
their educational and cultural background, their immediate environment, as well as their proficiency in the language, which is the medium of instruction.

From the responses of teachers on Teacher’s Feedback Scale, it is evident that-

1. 75% of teachers are not aware of the themes and sub theme suggested by NCERT for the formulation of textbook of Environmental Studies.

2. 56% of teachers do not know about the objectives laid down by NCERT.

3. 40% teachers are of opinion that the diagrams given in textbooks are fulfilling the needs of content presented in the chapter and 15% are against it while 45% are undecided.

4. 50% of teachers are of opinion that the diagrams given in textbooks have appreciable clarity and 35% of teachers are against the statement while 15% are undecided.

5. 27% teachers are of view that the diagrams given in the chapters are distinctly coloured and 41% are against this statement whereas 32% are undecided.

6. 64% teachers are of the opinion that the diagrams used in the textbooks are dull and blur and 21% are in opposition of the statement while 15% are undecided.

7. only 19% of teachers are in favour of the statement that the diagrams used are properly labeled while 45% are against the statement and 36% are undecided.

8. 70% teachers are undecided with the statement that diagrams have some sort of cause and effect relationship while mere 12% are in favour of the statement and 18% are against the statement.

9. only 19% teachers are of opinion that there are examples in each chapter of textbooks while 34% are against it and 57% are undecided.
10. 22% of teachers are of view that the examples given are in consonance of texts while 27% are against the statement and 51% are undecided.

11. 41% teachers are in favour of the statement that texts are properly punctuated whereas 25% are against the statement and 34% are undecided.

12. 44% teachers are of opinion that there are syntactical and printing errors in the textbooks while 25% are against it and 31% are undecided.

13. 37% teachers are of the view that syntactical and printing errors are altering the meaning of sentences while 25% are of opposite view and 38% are undecided.

14. only 13% are in favour of the statement that irrelevant information is there in the textbooks while 47% are of opposite opinion and 40% are undecided.

15. 52% teachers are of view that texts are properly paragraphed while 12% are against it and 36% are undecided.

16. 57% teachers are of opinion that the language used is easy and organised while 22% are of opposite view and 21% are undecided.

17. 79% teachers are unaware of the behavioural domain while only 11% are in favour of the statement that questions given in practice exercises are representative of every aspects of behavioural domain and 10% are against the statement.

18. 19% teachers are of opinion that questions given in practice exercises are evaluating the terminal behaviour while 20% have contradicting view and 61% are undecided.

19. only 6% of teachers are of view that part I of textbook of grade IV is better than part II while 80% are against the statement and 14% are undecided.
20. only 4% of teachers are in favour of the statement that part I of textbook of grade V is better than part II while 81% are against it and remaining 15% are undecided.

21. 20% teachers have opinion that texts are logically and systematically presented while 25% have contradicting view and 55% are undecided.

Conclusion

We cannot consider the textbooks as a benchmark material for study or understanding of environment. The implementation of Environmental Education in schools needs to be undertaken in a mission mode. The mission could be stated as: to prepare young minds to appreciate the importance of environment in a holistic manner, not only for human survival but for all life forms on earth, to inculcate a positive attitude towards environment, and to encourage pro-active action for a sustainable future. The whole purpose of introducing the subject to the students should be to encourage young minds to develop love and respect for environment and to inculcate in them an interest and curiosity about the environment they come across in their daily life. At the heart of the debate over school curriculum is the production of knowledge. The control of knowledge production is significant because it affects student’s beliefs and attitudes about society and environment. Because textbooks play such a crucial role in children's learning, multicultural education includes proposals for textbook changes to make the curriculum more representative of diverse views. The review of the environmental themes in the textbooks at different stages of school education reaffirms that textbooks, by and large, have environmental concepts included in them. However, they lack enough important concepts and themes, which would have been discussed there in. Findings of the study reveal that the textbooks have not reached the additive stage including key themes and issues as it is reflected in the responses of teachers. Textbooks are not only falling short of themes and sub themes coverage but the way they are presented need refinement in terms of presentation of diagrams, numbers of examples, nature of content,
proofreading, printing, and domain wise distribution of questions in practice exercise.

Every State Government has enough autonomy to develop textbooks but so much deviation from the guidelines of nodal body i.e. NCERT, is a matter of serious concern as it got direction from Hon’ble Supreme Court of India to develop the syllabus for the development of Environmental Education at school level, which further got approval of Hon’ble Court in their Judgment of IA No. 1 in Writ Petition (Civil) No. 860/1991 dated 13th July 2004.

Implications of the study

Environmental education is still a relatively young subject. Considerable research effort is needed in order to develop techniques to deal with the complex ecological relationships relevant to most environmental programmes.

The present study was conducted with an overall purpose of identifying the potential of environmental education textbooks. The study was therefore, designed to reviewing the content of the environmental education textbooks. The results of the present study have a wide implication for the improvement of learning environmental sciences in primary schools. Based on these results a few suggestions for improvement of textbook are presented below:

1. Coverage should be linked to the child's surroundings, health and hygiene along with suitable field activities and observations.

2. Content of the textbooks should be made attractive to make teaching-learning process interesting.

3. Integration of topics should be done. To facilitate this process, the basic inputs and ideas about the environment along with concrete examples could be given through components in the physical sciences and life sciences.
4. In order to make the content of environmental studies relevant to the student’s life, it should reflect local environmental concerns, problems, and local specific needs and be responsive to local specific challenges.

**Suggestions for further studies**

Although a large sample would be needed for drawing more definite conclusion, the study illustrated the fact that environmental education can play a relevant role in increasing consciousness about the environment. Such programmes are seen to have a strong potential for developing the nation’s ability to deal with biodiversity conservation especially those, which may have strong national applications.

- Based on the findings of this research, a study can be conducted to design an integrated environmental education plan for primary school students.
- A study can be conducted to develop environmental education material for different sections of society.
- Research can be conducted to develop appropriate technology for promoting environmental education among children, youths, women, and decision makers.
- Surveys can be conducted to analyse the present attitude of people towards the environment.
- Studies can be conducted for the development of curriculum in environmental education at different levels: Pre-school to University level.
- Case studies can be planned for the solution of the environmental problem of locality.
- A survey of topics related to environmental education of schools that are scattered in various subjects, not only in the Natural Sciences, but also in Social Science, Mathematics, Languages etc. can be done.
• As a path finding application of this research effort, an example of model curriculum, focusing the contemporary relevance of plant system for sustainable development can be developed for the curriculum maker to study its scope and plausibility.