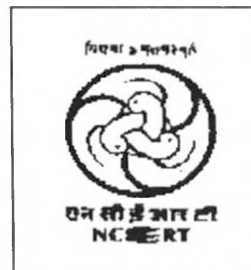


**NATIONAL CONSULTATION MEET FOR
DEVELOPING GENERAL GUIDELINES
FOR THE PREPARATION OF
TEACHERS' MANUALS IN THE SCHOOL
SUBJECTS**

16 - 17 February 2006



Coordinator

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MYSORE**
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FOREWORD

The teacher is at the heart of “instructed learning” and the instructed learning does not occur at random. The teacher needs to carefully plan the experiences to help the learners to fulfill their growth, to advance in developing their aptitudes, to seek out for their opportunities and destinies. The teacher manuals are intended to provide wide varieties of classroom options in presentation, content and pedagogical approaches so as to help teachers in deciding which is best suited for their classrooms. Keeping these objectives in view, NCERT, New Delhi has proposed to develop teachers’ manuals in all school subjects at all levels. The two-day National Consultation Meet was to seek the views of experts, practitioners and pedagogues across the country on various issues to be addressed while developing general guidelines for the preparation of teacher manuals. At the end of the meet, a consensus was arrived at and the guidelines were developed at each level of the school education. It is hoped that these guidelines would form the basis for developing proposed teacher manuals.

PRINCIPAL

NATIONAL CONSULTATION MEET FOR DEVELOPING
GENERAL GUIDELINES FOR THE PREPARATION OF
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Background

NCERT has been engaged in bringing out quality textbooks in all school subjects which have been taken as exemplars by the various state-boards while preparing their own textbooks. The National Curriculum Framework 2005 while discussing "Systemic Reforms" has drawn attention to the 'plurality of textbooks'. Given the perspective that curriculum content must meaningfully incorporate experiences of children and their diverse cultural contexts, including languages, it is important that textbook writing is decentralized.

It is also expressed that textbook writing requires a range of capacities that include academic and research inputs, understanding of children's different developmental levels, effective skills of communication, design, etc. The textbook writing involves the actual envisioning of the process where

selection and designing of the textbooks needs to be done in collaborative manner by teams rather than individual experts. The reasons given are that such collaborative exercises are perspective building, clarifications of assumptions of how children learn, understanding of required revisiting of subject knowledge and research inputs, understanding of processes of how to communicate with children, providing structural space for reflection and feedback by peers as ongoing process in the making of textbooks. It is also felt that academic research contributions from Universities and rich experiences of non-government organizations and practitioners must be important inputs in this exercise.

There is a suggestion to provide multiple textbooks to schools as they widen teachers' choices and also provide scope for incorporation of diversity in relation to children's needs and interests. When number of textbooks are available, the teacher can decide which text lessons are appropriate for specific needs of students. Alternatively they can also provide opportunities to encourage children to explore diverse sources and understand how the same content may be presented in different ways. It is stated that no one textbook can cater to the diverse needs of different groups of students. "Thus there is a strong case for preparing not only varieties of

textbooks but also other materials for promoting children's creativity, participation and interest in enhancing their learning."

It is in this context that the need for Teachers' manuals arises. In fact, it is suggested that these manuals should reach the teachers much before new set of textbooks are written. It is well- established fact that teachers across the country rely heavily on the textbooks for their classroom transaction. Many teachers who work in remote villages have no access to any reference books or support materials. In most of the developed countries, teachers' manuals are brought out along with textbooks at all levels and in all subjects of school education. These manuals are accessible to every teacher. The teacher manuals produced by UNESCO, Nuffield Foundation, CBA and CHEMStudy are some of the excellent examples of the work done by professionally competent team of pedagogues, educationists, teacher-educators and education researchers. Unfortunately, there has been no such focussed team efforts made in our country to produce authentic teacher manuals which can reach every teacher in the country cutting across the regions and the States.

Some of the issues to be addressed by teachers' manuals envisaged in NCF-2005 are:

- Teachers' manuals can be designed in many ways.
- They need not cover the content of textbooks chapterwise though, it may be one of the approaches.
- They may offer critique of established methods and suggest new ones.
- They may include lists of resource materials, audios and videos, sites on the internet. These would provide tips to the teachers which they could use while planning the lessons.

Further there is a concern expressed with regard to *multigrade teaching*. As most of the textbooks are designed for monograde teaching which require that all students of different grades are expected to do the same things. Instead, there would be need for alternative types of materials made available to the teachers as bases of planning lessons and units. Some of the suggestions are :

- Thematic lesson could be written with a variety of exercises and activities at different levels for different groups.

- Graded self-access materials could be included so that children can engage with on their own with minimum scaffolding from the teacher, allowing them to work on their own or with other children.
- Group Activities such as story telling or a small drama enabling children to participate in diverse activities could be suggested.

In general while writing the teacher manuals following points may be considered.

- ⇒ The manual need not seek to prescribe any particular form of curriculum, instead it should provide general grounding in the curriculum. It should give the teacher a sense of numerous options that are available. In this regard, the manuals should go beyond textbooks.
- ⇒ There could be strong arguments for its use by teachers before they went into classrooms to teach and after they actually had practical experience.
- ⇒ It should be able to present the classroom teachers with numerous available alternatives and to help them in deciding which is best for their particular classroom.
- ⇒ It should also have major implications in imparting inservice teacher training programmes.

⇒ It can even highlight some of the common mistakes committed by the teachers and their correction so that teacher can develop self corrective attitude leading to action research.

The foregoing are only some of the issues which may be addressed while developing guidelines for preparing teachers' manuals. However, they are by no means exhaustive.

National Consultation Meet at RIE, Mysore

The meeting took place on 16th February 2006 at 9.30 a.m. at RIE, Mysore. All the subject coordinators from different RIEs, the experts from Homi Bhabha Science Centre, Mumbai, the regional experts across the country presented their perceptions on general guidelines for the preparation of teachers' manuals in school subjects at different levels. The afternoon session was followed by brainstorming discussions on the presentations made by invitees. It was decided that the guidelines should be generic but specific to given level of school education. All the participants were assigned into four groups namely primary, upper primary, secondary and higher secondary. Each group participated in group discussion to arrive at general guidelines, format and layout of the proposed manuals.

On 17th February 2006, in the forenoon session, the guidelines were developed by each group specific to each level of school education. The convenor of each group presented the guidelines to the members of the meet to invite suggestions. In the afternoon session, after deliberations and prolonged consultations a comprehensive list of guidelines was finalized at each level of school education.

PROGRAMME SCHEDULE

The National Consultation Meet for the Development of General Guidelines for the Preparation of Teachers' Manual in the School Subjects

Date	9.30 - 1.00	2.00 - 3.30	3.45 - 5.30
16 th February 2006	Presentation by the RIEs / Experts/ NIE faculty on the Perceptions of <i>General Guidelines for the Development of Teachers' Manuals</i> (Each for about 20 Minutes)	Consolidation of the presentation of the forenoon session through Discussion and Formulation of tentative Framework for <i>Guidelines</i>	Group Work for the Development of <i>Guidelines</i> in each subjects / levels
17 th February 2006	9.00 - 10.00	10.15 - 1.00	2.00 - 5.30
	Continuation of the Group Work	Presentation by each Group and Discussions	Consolidation and finalization of the <i>General Guidelines</i>

**National Consultation Meeting for the Development of
General Guidelines for the Preparation of Teachers' Manual
in the School Subjects
16 - 17 February 2006**

Sl. No.	Name & Designation	Address	Phone No.
1.	Prof. V G Gambir	Homibhabha Centre for Science Education, TIFR, V.N.Purav Road, Mankhurd Mumbai 400 088	022-25567711 vg@hbcse.tifr.res.in
2.	Prof H C Pradhan, Dean	Homibhabha Centre for Science Education, TIFR V.N.Purav Road, Mankhurd Mumbai 400 088	022-25570813 hcp@hbcse.tifr.res.in
3.	Smt. Ajanta Brahma Reader, SCERT Assam Incharge, Education of Special Focus Group Children (ST)	SCERT, Assam Kahilipara, Guwahati - 19, Assam	0361-2382507 (O) 0361-2451666 (R) 98640 34083 (M)
4.	Dr Sushmita Sutradhar Das, Reader, SCERT Incharge Curriculum & Material Development, Assam, Guwahati	SCERT, Assam Kahilipara Guwahati 19 Assam	0361-2382507 (O) 0361-2366182 @ 98641 58166 (M)
5.	Mr S Kumaresan Dept. of Mathematics & Director, Mathematics Training and Talent Search Programme, NBHM	University of Mumbai Vidyanaagari, Kalina Mumbai 400 098	022-26528037 093222 26782 kumaresa@gmail.com
6.	Mr J Shankar Head, Academics and Pedagogy, Azim Premji Foundation	134, Doddakannelli Next to Wipro Corporate Office Sarjapur Road Bangalore 560 035	080-55144900

7.	Prof A B Mathur Retired Principal Govt. P.G. College	269, Saket Colony Vaishalinagar, Ajmer	0145-2640737
8.	Prof K K Sharma Retd. Vice Principal	1-GH-7 Vaishali Nagar Ajmer 305 006	0145-2641782 94140 03782
9.	Sri A C Pachaury Ex-Reader, RIE, Bhopal	110-B, Sushmita Apartments, Sector A Sarvadharam Colony Kolar Road, Bhopal 462 042	0755-2493277
10.	Dr K C Sharma Reader in Physics	RIE, Ajmer	2643720
11.	Dr Ram Niwas Sr. Lecturer in Hindi RIE, Ajmer	IV/10, RIE, Ajmer	0145-2644640
12.	Prof V K Sunwani Head, DESSH & Dean of Instruction	RIE, Bhubaneswar	0674-2540094 vksunwani@rediffmail.com
13.	Dr V G Jadhao Professor of Physics & Head, DESM, RIE, Bhopal 462 013, MP	161, Fine Avenue Nayapura, Kolar Road Bhopal 462 042, MP	0755-2661077 (O) 0755-2416816 vqjad@yahoo.com
14.	Prof K B Subramaniam Professor of Mathematics RIE, Bhopal 462 013	RIE, Bhopal	9229694679 2661301 *206 (O)
15.	Dr Brahma Prakash Professor	DESM, NCERT Sri Aurobindo Marg New Delhi 110 016	011-26561742 09911 106201
16.	Dr P K Durani Professor of Botany	Head, DESM RIE, Bhubaneswar 751 022	0674-2540233
17.	Dr Kameshwar Rao Lecturer in Mathematics RIE, Bhubaneswar 751022	Warden's Residence G.B.Hostel RIE Campus Bhubaneswar 751 022	0674-2542728 09337106326 kraoncert@hotmail.com
18.	Dr P R Lalitha Reader in Physics	RIE, Mysore	0821-2544370 (R)

19.	Dr G T Bhandage Professor of Chemistry And Dean	RIE, Mysore	0821-2416723 (O) 0821-2304525 (R)
20.	Dr S S Raghavan Professor of Physics	Incharge Physics RIE, Mysore	0821-2540133 (R)
21.	Dr N M Rao Professor of Mathematics	Incharge Mathematics, Section, RIE, Mysore	0821-2304525 (R)
22.	Dr Prema Raghavan Reader in English	DESSH, RIE, Mysore	0821-2540133 (R) 09342122271 (M)
23.	Dr B S Upadhyaya Professor of Mathematics	Head, DEE, RIE, Mysore	0821-2512252 (O) 0821-2412687 (R)
24.	Dr (Mrs) Premlata Sharma, Professor and Head, Dept. of Education	RIE, Mysore	
25.	Sri N S Raghunath Head, Dept. of Education in Social Science and Humanities (DESSH)	RIE, Mysore	

GUIDELINES FOR PREPARATION OF TEACHERS' MANUAL AT THE PRIMARY LEVEL

Members

Dr P R Lalitha Convener
Dr H C Pradhan
Dr Premlata Sharma
Mr J Shankar
Mrs Ajantha Brahma
Mrs Sushmitha Das
Mr Kameshwar Rao
Dr V K Sunwani

The Teacher's Manual would comprise of two parts : Part A and Part B. Part B would comprise of two manuals one for Standards I and II and the second for Standard III to V. Part A would be common to both.

Part A would contain the following :

1. *How to use the Manual*
This would give instructions to the teacher on how the manual should be used.
2. *Objectives of Primary Education*
Under this, the objectives of Primary Education should be extracted from NCF 2005.

3. *Concept Map / Flow Chart for the whole syllabus - classes I to V*

The Concept Map / Flow Chart drawn up should show the various topics/ themes that are to be dealt with at the Primary level showing interlinkages.

4. *Learning Preparedness / background*

The point from which learning process should begin for class I will depend on the readiness of the child for reading, writing and doing mathematics. The underlying skills for each of the three should be indicated in a diagrammatic form so that it supplements the concept maps, for eg.

→ reading - visual perception, visual discrimination, visual diagrams, visual closure, visual memory.

→ writing - eye-hand coordination, fine motor control, organizing space and size

→ mathematics-size, shape, difference in patterns, understanding the concrete, recognizing symbols representing the concrete, concept of number sequencing order, position and comparison

5. *Classroom Management Strategies*

Many of our primary schools are single teacher schools. Hence tips to the teacher must be given to handle classes of a varied nature like multigrade, multilingual, large size and inclusive. Students come from varied socio-economic and educational backgrounds which may be considered while managing the class.

6. *Learning Processes*
Different types of activities like group activities, role playing, individual activities may be suggested with exemplars drawn from relevant content.
7. *Uniqueness of Children*
Different children learn differently or their learning styles are different. Hence while writing the manual, this should be taken into account. For example, multiple intelligence.
8. *Assessment, Roadblocks in learning and suggested Remediation*
This section should contain the tools that are to be adopted for assessment (formative), to identify, learning blocks and suggested remediation.
9. *Managing behavioural problems*
Approaches that teachers can follow to deal with behaviour problems without using corporal punishment should be included here.

Part B

The 1st Manual for I and II standards should deal with the selected content/ themes identified adopting an integrated approach.

The 2nd Manual for III to V standards may use a thematic approach.

The following aspects can be included in Part B in both the volumes.

1. *Overview of the subjects* - This can be given in the form of a concept map indicating the interconnectivity between the topics identified at these levels.
2. *The Road Blocks* can be identified and enlisted here.
3. *The important teaching points* must be identified and enlisted here.
4. *Activities* of a varied nature like role play, dramatization, recitations, nature walk which can be adopted to teach the various topics should be given taking care to see that they develop the process skills.
5. *Tools of Assessment* with exemplars should be given taking into account the themes identified at these levels. Based on the formative assessment, road blocks can be addressed and remedial measures must be suggested.
6. *Websites* and *Resources* can be enlisted as a hard copy or on a CD.

GENERAL GUIDELINES FOR TEACHERS' MANUAL AT UPPER PRIMARY LEVEL

Members

Dr K C Sharma - Convenor

Dr V G Gambhir

Dr K K Sharma

Dr Ram Niwas

Importance of teachers' manuals can hardly be over emphasized. Teachers' manuals are intended to provide resource material to help teachers transact lessons effectively and efficiently in both content and methodology. They are of course different from textbooks but similar in their ultimate aim. Resource materials contained in the manuals need not be same as in textbook. They need not even cover exactly the same content as available in the textbooks. It should however, fulfil the requirement envisaged in NCF-2005 for various curricular areas at different stages of schooling.

The above committee considered various issues for teachers' manual at the upper primary level and suggests that :

1. The teachers' manual should be separate for each subject.
2. Preparation for the manual for class VI may be undertaken to begin with. This material may be reviewed by teachers and educationists. Their feedback may be

taken into consideration in modifying the material prepared for class VI as well as preparing the material for class VII and VIII subsequently.

At the appropriate stage, the theme based material for class VI, VII and VIII should be woven together to make a single volume for the given subject at upper primary stage (i.e. class VI, VII, VIII).

3. The nature and contents of this manual should have the following characteristics :
 - It should be a meaningful resource book for teachers that provides richness in the understanding of concepts.
 - Should illustrate effective ways of presenting the content to the learners.
 - Should provide effective transactional approaches.
 - Should contain interactive, effective, relevant and joyful activities related with the themes.
 - Should enlist exemplar resources : print, audio-video, computer assisted and ICT based material
 - The style of presentation should be reader friendly.
 - Should highlight the linkage between curriculum and day to day life.
 - Should include questions to stimulate students in observation, thinking and exploration, making guesses and verifying them.
 - The material should contain enough information to deal with anticipated curiosity of the children in the related theme.
 - Should prepare the learner for participation in solving scientific, technological, environmental and social problems
 - Wherever possible relevance of the themes with the environmental issues and the life style should be highlighted.

- Guidelines for theme related project work, appropriate for each class should be incorporated in the resource material.
- The size of the volume may vary from subject to subject. However care must be taken in the style of presentation so that it should not be unduly large or too condensed.
- The writing style should be suggestive but not prescriptive.
- The printing style, font size, spacing, figures, diagrams, etc. should be commensurate with the age group of the reader, font size may not be less than 11 with proper line spacing.

Teaching of Elementary Science

Science Curriculum (NCERT) for this stage has been developed around certain themes namely Food, Materials, the World of living, Moving things, people and ideas, how things work, natural phenomena and natural resources. Science syllabi at this stage is a step by step development of concepts in these areas through class VI - VIII. The child at this stage should be engaged in learning principles of science through familiar experiences, working with hands to design simple technological units and modules, to learn more on environment and health through activities and surveys. Scientific concepts are to be arrived at mainly from activities and experiments. Group activity, discussions with peers and teachers, surveys, meaningful use of data and their display for information, knowledge or message through exhibitions, etc. in schools and

neighbourhood are to be important components of pedagogy. The teachers' handbooks at this stage should therefore promote learning of scientific concepts through :

- familiar experiences
- environmental awareness and environmental concerns
- activities affecting life
- experimentation, assembling and designing by hand
- use of simple tools and working models
- concerns of health
- day to day scientific phenomena
- practicing concern for resources
- group activities, discussion with teachers and peers

Transactional methodology should centre around **construction of knowledge** by the learner. No one particular methodology may suit each and every learner, a blending of approaches is to be suitably explored by the teacher and the manual therefore should be equipped with varied resources available to the teachers.

Teaching learning process should be **joyful**, neither rote nor stressing and burdensome. It should be related with life outside the school and beyond textbooks. It should also relate to the various scientific, environmental, technological, social and ethical values, scientific temper and human qualities enshrined in the Constitution of India.

Science is associated with its process. Common scientific processes at elementary stage include observation, identification, classification, relationships, measurement, experimentation, cause-effect relationships, interpretation, inference, prediction and making hypothesis and testing the same. Teacher manual must promote process association with science teaching.

People today are faced with fast changing world. Flexibility and adaptability are the important basic skills to be developed. Attributes of learning to learn and to be able to construct the knowledge are very important across every area of science and technology.

NCF-2005 (Criteria for an Ideal Science Curriculum) observes that good science education is true to science, true to child and true to life. The manuals therefore require that

- i) the content, process, language and pedagogical practices of the curriculum are age appropriate, and within the cognitive reach of the child.
- ii) The curriculum must convey significant and correct scientific content. Simplification of content by drawing from analogies, similarities, notions and beliefs, which is necessary to adapt the curriculum to the cognitive level of the learner, must not convey something erroneous or meaningless.

- iii) The curriculum should engage the learner in acquiring the methods and processes that lead to generation and validation of scientific knowledge and nurture the natural curiosity and creativity of the child in science. Process validity is an important criterion since it helps the student in 'learning to learn' science and construct his knowledge.
- iv) The teaching of science be placed in the wider context of the learner's environment, local and global, enabling them to appreciate the issues in science, technology and society and preparing them with the requisite knowledge and skills to enter the world of work.
- v) The curriculum promotes the values of honesty, objectivity, co-operation, freedom from fear and prejudice and develop in the learner a concern for life and preservation of environment.
- vi) The science curriculum must include historical perspective, enabling the learner to appreciate how the concepts of science evolved with time and to understand how social factors influence the development of science. Learner should be also able to take pride in national contribution and wisdom in various areas of learning.

Resource Material

Teachers' manuals should contain enough information about available resources like science projects, museums, kits, charts, audio, video and computer assisted learning materials. Field trips to such projects and other centers of learning science may also be included in the process.

ICT

Information and Communication Technology (ICT) and internet sites must be exploited thoroughly to be informed and knowledgeable about the various issues in the field and approaches towards them. Related internet websites may be searched and integrated with transactional methodology and also referred to in the resource material. ICT is an important constituent of resource material.

Format for Writing

It would be useful to develop a format for writing manuals. The format may be developed according to the needs of discipline area and it should also have some flexibility to adapt to the needs of special topics. A format for writing on themes in the area of science is suggested below. It is only suggestive and open for modification.

1. **Overview :** Comprising of what the chapter is about, why it is important to learn this, about things that shall be learnt in this chapter.
2. **Sub-Themes:** (as per syllabi with contextual/thematic relevance)
 - No. 1
 - No. 2
 - No. 3, etc.

3. **Key Concepts (for each sub-theme) :**
With a small description of the sub-theme - mention of key concepts as per the syllabi (filling with missing links for continuity in sequence)
4. **Teaching Objectives (for each key concept)**
5. **Transactional Strategies (for each key concept) :**
Science process based on activity oriented learning material with aids, kits and self check questions enriched by reflective questions may be given at the end.

It is proposed to include ICT ((Information and Communication Technology) instruction methodology, multimedia inputs from audio, video and computer assisted TLM with exploratory activities from and around the environment in transacting the contents.

6. **Summary and Concept Map (for the sub-theme)**
7. **Reference / Resource Material (for the sub-theme)**
8. **Reflective and Assessment Questions (for the sub-theme)**

भाषा शिक्षण

भाषा शिक्षण का उद्देश्य समझकर पढ़ना, लिखना और विद्यार्थियों में अपने आप सीखने की क्षमता उत्पन्न करना है। इसी आधार पर भाषा शिक्षण की पद्धतियाँ और शिक्षण सामग्री भिन्न-भिन्न और कई प्रकार की हो सकती है।

- भाषा शिक्षण में गद्य, पद्य, व्याकरण के अध्यापन में परंपरागत उपदेशात्मक शैली के मोह से शिक्षक को बचना आवश्यक है।
- भाषा शिक्षक के लिए यह अंतर्दृष्टि आवश्यक है वह विशिष्ट संदर्भों और प्रासंगिक उद्देश्यों की पहचान करें तथा उसी के अनुरूप शिक्षण प्रविधियों, सामग्री, शिक्षण प्रशिक्षण के कार्यक्रम मॉड्यूल, पाठ योजनाएँ तैयार की जाएँ।
- भाषा शिक्षण को सम्यक और समग्र परिवेश में ही देखा जाना उचित है। पाठ्य पुस्तक से बाहर जाकर क्रिया कलाप कराए जाने चाहिए। ये भाषा संबंधी क्रिया कलाप हो सकते हैं, वास्तविक जीवन अनुभव से संबंधित क्रिया कलापों को वरीयता दी जाए।
- शिक्षक को कक्षा में नया भय उत्पन्न नहीं करना चाहिए भय से सीखने की क्षमता कुंठित होती है।
- आनंददायी शिक्षण हेतु भाषा-साहित्य, व्याकरण आदि के लिए विषयवस्तु के अनुरूप शिक्षण विधि को अपनाया जाए।

- भाषा के पाठों में पर्यावरण के प्रति चेतना सहज रूप से विकसित की जा सकती है यथा: कुआँ और उसकी स्थिति जैसा विषय गृह कार्य में दिया जा सकता है । मेरे गाँव में क्या है जब मैं मित्र के गाँव में गया तो क्या देखा ? अस्पताल में फूलों का गुलदस्ता ले जाए अथवा नहीं । पशु तथा पर्यावरण प्रेम पर ध्यान दिया जाए ।
- किसी भी मुद्दे को एक ही नजरिये से न देखा जाए ।
- छात्रों को भाषा संबंधी प्रोजेक्ट भी दिया जा सकता है ।
- अध्यापन मित्रवत होना चाहिए वह भार के रूप में नहीं हो ।
- पत्र लेखन, निबंध लेखन में परंपरागत विषयों से हटकर नए विषय भी जोड़ दिए जाए । सामाजिक, मानवीय संवदेना, मूल्य और गुण, सामाजिक मुद्दे, दहेज प्रथा, लिंग भेद, रूढ़ि अंधविश्वास, सर्वधर्म समभाव और सद्भावना का विकास जैसे अपरिहार्य गुण झलकने चाहिए ।
- गाँव में प्रतिदिन कितना कचरा पैदा होता है, कहाँ पर डाल दिया जाता है । गाँव की जानकारी और अनुभव भी शामिल किए जाने आवश्यक है ।
- गेरी रूचि, गेरा जीने का ढंग जैसे विषयों पर दस पंक्तियाँ लिखवाना अथवा छात्रों को बोलने के लिए प्रेरित करना ।
- छात्रों की कठिनाइयों को दूर करें, विचार आधारित कठिनाइयों को प्राथमिकता दी जाए ।

- छात्रों को सोचने, चिंतन मनन करने के यथा संभव अवसर देना जैसे तुम्हारे गाँव में एक नई फैक्ट्री आ रही है आप क्या सोचते हैं उत्तर दीजिए ।
- यदि कोई विद्यार्थी ऐसा प्रश्न करता है जिसका जवाब शिक्षक के पास नहीं है, तब क्या किया जाए ?
- कक्षा में प्रश्न का उत्तर देने के लिए वही दो चार छात्र छात्राएँ हाथ ऊपर करते हैं बाकी छात्र नीची गरदन किए रहते हैं ऐसा क्यों ? क्या आपकी कक्षा में ऐसा होता है । इस प्रकार के अन्य प्रश्न भी बॉक्स में छोड़ते चले जाएँ ।
- यह शिक्षक संदर्शिका आदेशात्मक नहीं बल्कि परामर्शात्मक हो ।
- उपर्युक्त सभी बातों का ध्यान रखकर ही इसका लेखन किया जाना श्रेयस्कर रहेगा ।

GUIDELINES FOR DEVELOPING TEACHERS MANUAL FOR ALL SUBJECTS AT SECONDARY LEVEL

Members

1. Dr V G Jadhao Convenor
2. Prof H C Pradhan
3. Prof K B Subramaniam
4. Dr Prema Raghavan
5. Shri A C Pachaury

Teachers manual will be developed **subject-wise** in two parts of the same manual. Part I will deliberate upon general issues in content and pedagogy as delineated in NCF 2005. Part II will consist of exemplar materials on the basis of the syllabus for classes IX and X

Part I should include

- How to use the manual ?
- Nature and significance of subject
- Children's knowledge
- Teaching for construction of knowledge
- Content validity, process validity, historical validity, environmental validity and ethical validity.
- Development of process such as observation, measurement, drawing of inferences, hypothesis making, predicting and testing of hypotheses.

- Teachers acquaintance with subject specific highlights as outlined in summary of NCF 2005 pp 127-128.
- Strategies for nurturing creativity.
- Analysis of common mistakes/errors/alternative frameworks of pupils.
- Evaluation strategies.

All the above will be compulsorily illustrated and integrated with the content in an appropriate manner.

Part II An Exemplar

Exemplars could be

- i) activity based
- ii) unit based
- iii) problem based
- iv) any other

It may include

- i) Overview
- ii) Objectives
- iii) List of concepts/sub concepts - concept map
- iv) Alternative framework / errors and mistakes
- v) List of processes
- vi) Activities for teachers (Related higher knowledge)
- vii) Activities for pupils
- viii) Testing of pupil achievement
- viii) Reference of books and websites.

Details of format will be decided by the subject coordinators of teacher manual.

GENERAL GUIDELINES FOR THE PREPARATION OF TEACHERS' MANUAL IN THE SCHOOL SUBJECTS

HIGHER SECONDARY LEVEL

The Committee for the above task at the Higher Secondary level consisted of the following faculty members.

1. Prof.S.Kumaresan, University of Mumbai
2. Dr P K Durani, RIE, Bhubaneswar
3. Dr Brahma Prakash, DESM, NCERT, New Delhi
4. Sri N S Raghunath, RIE, Mysore
5. Prof K K Sharma (Retd Principal), Ajmer
6. Prof S S Raghavan, RIE, Mysore
7. Prof N M Rao, RIE, Mysore
8. Prof G T Bhandage, RIE, Mysore

The decision taken are the following :

Guidelines : The manual should be

- i) Aimed at achieving the objectives stated for different subjects
- ii) Should be subject-wise (Physics, Chemistry, Mathematics, Biology, English, etc).
- iii) Classes XI and XII should be combined because of continuity in the content.
- iv) Based on the topics of NCERT curriculum which can be adopted by the States.
- v) No part of the textbook need be reproduced.
- vi) Development of innovative/improvised experiments, projects, models, activities, charts, etc. may be suggested wherever appropriate.
- vii) Thought provoking questions, paradoxes, anecdotes, etc. may be used to develop the concepts in the manual.

- viii) May accompany a CD containing additional information including history of science, references to websites, different diagram and also free software relevant to the topic.
- ix) Reference books and other reference materials pertaining to the subject/ each topic should be given in the end.
- x) Additional work, special projects, open questions, etc. should be incorporated for the purpose of gifted students as well as slow learners.
- xi) The structure of the discipline should be highlighted wherever possible.

Format

- i) A brief introduction to the manual should be given in the beginning with the details of the contents included and the method of using the manual.

The format for each topic / chapter / lesson can be the following :

- i) Short introduction / overview of the chapter highlighting the importance of the topic for motivating the reader.
- ii) **Objective** : Clearly stated objectives.
- iii) **Content Material** : covering all important aspects of the topic, stepwise presentation of the subject matter in terms of alternative approaches, activities, demonstrations, improvisation charts, models, etc. General misconceptions and hard-spots may be discussed in more details.
- iv) **Evaluation** : A number of sample questions of different difficulty levels for evaluation may be given. Process skills may be tested when students conduct experiments. The remedial measures may be suggested based on the responses of the students.
