

## REVIEW PAPER

# Scope and Significance of Science Textbooks in NCERT Curriculum

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## ABSTRACT

**Science (from Latin *scientia*, meaning “knowledge”)<sup>[2][3]:58</sup> is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe.<sup>[a]</sup>**

**Key words** *Scope and Significance, Science Textbooks, NCERT Curriculum*

Contemporary science is typically subdivided into the natural sciences which study the material world, the social sciences which study people and societies, and the formal sciences like mathematics. The formal sciences are often distinguished from the empirical sciences as the former does not depend on empirical observations.<sup>[4][5]</sup> Disciplines which use science like engineering and medicine may also be considered to be applied sciences.<sup>[6]</sup> Science is related to research, and is normally organized by a university, a college, or a research institute. The teaching methods of science of NCERT curriculum can be systematic and interesting as expressed in this article.<sup>(1)</sup>

## WIDE KNOWLEDGE OF SCIENCE

From classical antiquity through the 19th century, science as a type of knowledge was more closely linked to philosophy than it is now and, in fact, in the West the term “natural philosophy” encompassed fields of study that are today associated with science such as physics, astronomy, medicine, among many others.<sup>[7]:3[6]</sup> In the 17th and 18th centuries scientists increasingly sought to formulate knowledge in terms of *laws of nature*. As a slow process over centuries, the word “science” became increasingly associated with what is today known as the scientific method, a structured way to study the natural world.<sup>(2)</sup>

## NCERT –AUTONOMOUS ORGANISATION

The National Council of Educational Research and Training (NCERT) is an autonomous organisation of the Government of India that was established on 1 September 1961 as a literary, scientific and charitable Society under the Societies’ Registration Act (Act XXI of 1860). Its headquarters are located at Sri Aurobindo Marg in New Delhi.<sup>[1]</sup> Dr Hrushikesh Senapathy has been director of the council since September 2015.

Textbooks published by NCERT are prescribed by the Central Board of Secondary Education (CBSE) from classes I to XII, with exceptions for a few subjects. Around 19 school boards from 14 states have adopted or adapted the books. Online textbooks can be downloaded from the [epathshalawebsite](http://epathshalawebsite[2])<sup>[2]</sup>. Those who wish to adopt the textbooks are required to send a request to NCERT, upon

which soft copies of the books are received. The material is press-ready and may be printed by paying a 5% royalty, and by acknowledging NCERT.<sup>(3,4)</sup>

The textbooks are printed in colour and are amongst the least expensive books in Indian bookstores, with each for up to class VIII having a maximum price of Rs 50 (formerly Rs 30). Textbooks produced by private publishers are priced higher than those of NCERT.<sup>[3]</sup> According to a government policy decision in 2017, the NCERT will have the exclusive task of publishing central text books from 2018, and the role of CBSE will be limited to conducting examinations

Science is an inspiring process of discovery that helps satisfy the natural curiosity with which we are all born. Unfortunately, traditional instruction that misrepresents science as a body of facts to be memorized and the process of science as a rigid 5-step procedure can deaden students’ spirit of inquiry.

## TEACHING SCIENCE CURRICULUM OF NCERT

Students should come away from our classrooms with an appreciation of the natural world — fascinated by its intricacies and excited to learn more. They should view and value science as a multi-faceted, flexible process for better understanding that world. Such views encourage life-long learning and foster critical thinking about everyday problems students face in their lives. You can cultivate these ways of thinking in your students through science instruction that accurately and enthusiastically communicates the true nature of science and that encourages students to question how we know what we know.

Fortunately, fostering such understandings needn’t require reorganizing your entire curriculum. Simple shifts in how content and activities are approached can make a big difference in overcoming student misconceptions and building more accurate views of the process of science. Educational research supports the following strategies for teaching about the scientific endeavor:

- **Make it explicit:** Key concepts regarding the nature and process of science should be explicitly and independently emphasized. Engaging in inquiry and studying the history of science are most helpful when the nature-of-science concepts they exemplify are explicitly drawn out in discussion and interactions.<sup>(5,6)</sup>
- **Help them reflect:** Throughout instruction, students should be encouraged to examine, test, and revise their ideas about what science is and how it works.
- **Give it context, again and again:** Key concepts about the nature and process of science should be revisited

in multiple contexts throughout the school year, allowing students to see how they apply to real-world situations.

### IMPROVING CONTENT KNOWLEDGE

We've assembled a variety of resources to help you increase student understanding of nature and process of science. To improve your own content knowledge, explore Understanding Science 101 and our resource library. To prepare yourself with lesson plans, teaching tips, and pedagogical strategies, visit a Teacher's Lounge or explore the all-level resources listed below and to the right.

- K-2 teachers' lounge
- 3-5 teachers' lounge
- 6-8 teachers' lounge
- 9-12 teachers' lounge
- Undergraduate instructors' lounge
- Teacher Educators' lounge . Guide to Understanding Science 101 — Educate yourself about the basics of the nature and process of science
- Conceptual framework — Identify age-appropriate learning goals for your students with this chart of conceptual understandings regarding the nature and process of science.
- Teaching tools — Find tools that will help your students visualize the nature and process of science.
- Resource database — Get lessons, activities, readers, videos, and more.(7,8)

- Image library — Locate educational images to use in lectures and on handouts.
- Correcting misconceptions — Learn about common student misconceptions so you can help correct them.
- Misconceptions about teaching — Find out what misconceptions some teachers have about teaching about the nature and process of science.
- Educational research — Learn what the educational research says about student learning on the nature and process of science(9)

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