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PHYSICAL SCIENCE TEXTBOOKS: HISTORY AND PHILOSOPHY OF SCIENCE



Nova Science Publishers Inc. Paperback. Book Condition: new. BRAND NEW, Physical Science Textbooks: History and Philosophy of Science, Mansoor Niaz, Research in science education has recognised the importance of presenting physical science within a history and philosophy of science (HPS) perspective in order to facilitate students' understanding. The objective of this study is to present a framework based on HPS for analysing introductory freshman level general chemistry and physics textbooks published in U.S.A. A review of the relevant literature in science education shows that most textbooks ignore HPS, while presenting the following topics: Atomic structure; Determination of the elementary electrical charge; Laws of definite and multiple proportions; Kinetic theory of gases; Covalent bond; Periodic table; and, Quantum numbers. This research shows that textbooks generally do not present progress in science as it is actually practised by scientists. For most textbooks, doing science means accumulating empirical data with no reference to the interpretation of the data based on the scientist's theoretical framework or presuppositions. The role and importance of presuppositions and guiding assumptions along with the theory-ladenness of observations are the major contributions of the new post-positivist philosophy of science. Given the importance of textbooks in most parts of the world, such presentations deprive students of the dynamics of scientific research that involves controversies, conflicts and rivalries among scientists, that is in a nut shell the humanising aspects of science. This research has been extended to show that inclusion of these facets of science in the classroom can be stimulating for students and facilitate greater conceptual understanding. It is concluded that if the authors want their students to understand science and not simply memorise algorithms, then a revision of the textbooks is necessary.



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