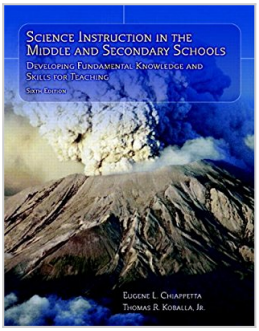

Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching (6th Edition)

By Eugene L. Chiappetta, Thomas R. Koballa

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For courses in Secondary Science Methods. Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching has been thoroughly revised to provide the initial scaffolding needed by beginning teachers to understand and enact the basics of science teaching and learning. This new edition includes six new introductory chapters focusing on the basic functions of science teaching-purpose, planning, teaching, managing, and assessing.

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Editorial Review

From the Publisher
The updated edition of this popular, comprehensive methods text continues its tradition of offering prospective science teachers essential theoretical background along with numerous practical ideas for teaching science and promoting science literacy in middle and secondary schools. This text explores the history of science education in the United States, including the influence of such major learning psychologists as Gagne, Bruner, Piaget, and Ausubel. Individual chapters offer a wealth of instructional strategies for teaching science, as well as rationale and techniques for instructional planning at the lesson, unit, and course level.

From the Back Cover

This science methods textbook is designed to prepare middle and high school science teachers to help students become scientifically and technologically literate by first helping them understand the elements of science reform and then supporting their efforts.

Features new to the fifth edition include:

- Open cases and vignettes that illustrate how science teachers help students construct their own understanding
- "Stop and Reflect" exercises throughout each chapter to help readers contextualize and reflect upon what was read
- Expanded coverage of teaching students with special needs and equity in science teaching and learning
- Discussion of a variety of alternative and authentic assessment methods

Since the late 1980s, science education reform has been underway in the United States. It is a movement aimed at providing the highest quality of science education for all students. A major recommendation of the reform is to focus less on teaching more science content, and spend more time engaging students in exploring science phenomena. Science reformers believe greater learning takes place when students construct their own understanding of conceptual ideas by building on what they know and by finding personal meaning from their science course experiences.

This science methods textbook is designed to support the science education reform by assisting educators to prepare science teachers, who in turn must educate students to become scientifically and technologically literate for the 21st century. This goal presents a tremendous challenge for science teachers, because there is no simple curricular formula or set of instructional strategies that will ensure students will develop a firm understanding of science, mathematics, and technology. Increasing the challenge for science teachers is the fact that many students find science courses difficult and uninteresting. Further, some segments of our society are not only underrepresented in the scientific and engineering professions but also receive a less-than-adequate science education.

New to This Edition

Many of the chapters have been modified for this fifth edition. For example, Chapter One, "The Nature of Science," has incorporated many statements from the national science education reform documents to provide amore comprehensive and up-to-date view of science and what scientists do in their work. Chapter Two, "History of Science Education, National Standards, and Innovative Programs," presents a more comprehensive rationale for the science education reform and includes a summary of the Third International Mathematics and Science Study and the National Assessment of Educational Progress. Sections in Chapter Three, "The Nature of Diverse Adolescent Learners and Their Schools," that address the teaching of students with special needs and equity in science teaching and learning have been updated and expanded. And in Chapter Four, "Learning in Middle Grades and Secondary Schools," you will find a clear conception of teaching science *by* inquiry and teaching science as inquiry, and discussion about which of these ideas is being promoted in the science education reform.

Significant improvements have also been made to chapters that address teaching strategies, classroom management, planning, and assessment. Chapter Seven, "Science, Technology, and Society" has been modified to include a more thorough discussion of options for incorporating STS in the middle grades and secondary curricula. In the section on evolution and creationism also found in this chapter, seven of the most notable events and court cases are summarized concerning this ongoing controversy, including the recent Kansas Board of Education action to de-emphasize evolution in the state's curriculum. Chapter Ten, "Computers and Electronic Technology," has been rewritten to highlight uses of the Internet to support student science learning. The new title and contents of Chapter Eleven, - "Managing the Learning Environment," reflect the changing emphasis in classroom management from a paradigm of student obedience to one of student responsibility. Chapter Twelve, "Planning and Teaching Science Lessons," has been altered considerably to focus more on direct teaching exercises that are often conducted in science methods courses in order to provide feedback to prospective science teachers on their ability to teach interactive lessons to peers or students. And Chapter Fourteen, "Assessing Learning Outcomes," stresses an expanded view of assessment consistent with the current reform movement. Discussed in this chapter are a variety of alternative and authentic methods that can be used by teachers to assess learning outcomes in science and Web-based sources for locating student assessment tasks and scoring rubrics.

Unique Text Features

Certain text features are unique to this secondary science methods text. For example, open cases and vignettes highlight the work of science teachers as they help students construct their own science understandings. These records of classroom events have been placed in boxes at various places throughout each chapter. "Stop and Reflect" exercises have been positioned at the end of certain sections within each chapter to help readers contextualize what they read and think critically about its classroom applications.

This methods textbook is in some ways an historical document, the product of almost 50 years of science education experience. During these years, many changes have occurred in the profession and in schools. Nevertheless, other aspects have remained constant. Science teachers who are knowledgeable and enthusiastic about their work and who make science relevant and interesting seem to produce positive results through their teaching. We have tried to emphasize in this textbook what effective science teachers have always displayed in their teaching as well as to incorporate the latest findings of research on science teaching and learning.

ACKNOWLEDGMENTS

Many people have contributed to this textbook since its original publication which was written by Walter A.

Thurber and Alfred T. Collette. We very much appreciate their efforts. We would especially like to thank those who assisted us with the fifth edition: Dale Taggart for examining the Nature of Science chapter, and David Jackson for providing feedback on the Computers and Electronic Technology chapter; Virginia Tucker and Lisa Kenyon for their recommendations on the cell lesson plan; Gerald Skoog for his expert review of the evolution and creationism section in the Science-Technology-Society chapter; and Angela Lorio, Teri Daniel, and Sandy Olson for their assistance with photographs of teachers and students, as well as Shawn Glynn for several fine photographs that appear in this edition. We wish to also thank Dava Coleman for suggesting improvements to several of the chapters, and Barbara Chiappetta for her help in preparing the chapters for submission to the publisher. Finally, we wish to extend thanks to the many science educators who have told us about their experiences using earlier editions of this book. Their stories, rich with personal experiences about the growth of beginning science teachers, inspire us to continue to improve upon the work begun by our mentors, Thurber and Collette, more than 40 years ago.

Finally, we thank the reviewers of our manuscript for their comments and insights: Paul Adams, Fort Hays State University; Shelley White Fones, Clemson University; Julie Luft, The University of Arizona; Ann Haley MacKenzie, Miami University; Harold McKenna, The City College of New Jersey; and Dana L. Zeidler, The University of South Florida.

Eugene L. Chiappetta
and Thomas R. Koballa, Jr.

Users Review

From reader reviews:

Michael Riddle:

Nowadays reading books become more and more than want or need but also become a life style. This reading addiction give you lot of advantages. Associate programs you got of course the knowledge the actual information inside the book in which improve your knowledge and information. The information you get based on what kind of e-book you read, if you want attract knowledge just go with knowledge books but if you want feel happy read one along with theme for entertaining such as comic or novel. The Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching (6th Edition) is kind of reserve which is giving the reader unstable experience.

Sandra Castillo:

Reading a book tends to be new life style on this era globalization. With reading you can get a lot of information that may give you benefit in your life. Having book everyone in this world can share their idea. Guides can also inspire a lot of people. Plenty of author can inspire their own reader with their story or even their experience. Not only the storyline that share in the textbooks. But also they write about the information about something that you need example of this. How to get the good score toefl, or how to teach your kids, there are many kinds of book which exist now. The authors on this planet always try to improve their talent in writing, they also doing some analysis before they write to the book. One of them is this Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching (6th Edition).

Herlinda Jerkins:

A lot of people always spent their particular free time to vacation or even go to the outside with them friends and family or their friend. Were you aware? Many a lot of people spent they free time just watching TV, as well as playing video games all day long. If you want to try to find a new activity honestly, that is look different you can read some sort of book. It is really fun for yourself. If you enjoy the book that you simply read you can spent 24 hours a day to reading a e-book. The book Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching (6th Edition) it is extremely good to read. There are a lot of people that recommended this book. We were holding enjoying reading this book. If you did not have enough space to bring this book you can buy typically the e-book. You can m0ore easily to read this book from the smart phone. The price is not to cover but this book possesses high quality.

Gaye Lewis:

The reason why? Because this Science Instruction in the Middle and Secondary Schools: Developing Fundamental Knowledge and Skills for Teaching (6th Edition) is an unordinary book that the inside of the guide waiting for you to snap that but latter it will distress you with the secret that inside. Reading this book adjacent to it was fantastic author who also write the book in such remarkable way makes the content on the inside easier to understand, entertaining means but still convey the meaning thoroughly. So , it is good for you because of not hesitating having this nowadays or you going to regret it. This phenomenal book will give you a lot of rewards than the other book possess such as help improving your proficiency and your critical thinking means. So , still want to hold up having that book? If I were being you I will go to the reserve store hurriedly.

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