

PREFACE

The lead author of this publication (Wenning) was director of the Physics Teacher Education Program at Illinois State University (ISU) from 1994 to 2008. During this time, he developed six teaching methods courses required for all physics teacher education majors. From 2005 to 2007, the co-author of this publication (Vieyra) took these courses and contributed greatly to their development. These courses—all still taught at Illinois State University—serve as the basis of the present work.

While there are many physics teacher education (PTE) programs, the lead author knows of no program to formally educate those who prepare physics teachers. As a result, development of the ISU PTE program was a seat-of-the-pants operation, one in which each year brought increased knowledge, practical experience, and craft wisdom, much of which will be passed on to the reader of this book.

Because no one person can know everything necessary for writing a broadly comprehensive work such as this, the lead author is deeply indebted to the co-author (a highly experienced and award-winning high school physics teacher) for assisting with this effort. She provided practical insights to the “ivory tower” university educator’s thinking. It is she who contributed greatly from moving this work from the theoretical to the practical.

The authors extend thanks to all who have contributed to this effort by reviewing various chapters of this book, making corrections, and offering suggestions for improvement. The following individuals have contributed time and effort reviewing this publication: Michael Lorber, Illinois State University (IL); Brittany McNulty, Morton High School (IL); Saleha Banu, Chicago Public Schools (IL); Shane Hanson, Lanphier High School (IL); Kathy Koenig, University of Cincinnati (OH); Charles Dorman, EF Academy-Thornwood (NY); David L. Byrum, Ruamrudee International School (Bangkok, Thailand); Marshall Ellenstein, Maine West High School (IL); Kevin S. Horton, Cienega High School (AZ); Janet Landato, Harper College (IL); Ingrid Novodvorsky, University of Arizona; Arif Hidayat, Indonesian University of Education (Bandung, Indonesia); Carl Covatto, Arizona State University; Kathleen A. Harper, The Ohio State University; Brian D. Campbell, Southwestern Oklahoma State University; Paul M. Miller, West Virginia University; Adam J. Kent, West Des Moines Community Schools (IA); Lane Fischman, The Archer School for Girls (CA); Tom Holbrook, University High School (IL); Kenneth Wester, Illinois State University; Timothy McCaskey, Columbia College Chicago; William G. Newton, Texas A&M University, Commerce; Lilik Hasanah, Indonesian University of Education (Bandung, Indonesia); Nick Cabot, University of North Carolina, Chapel Hill; Jeffrey J. Steinert, Arizona School for the Arts; William J. Canham, Hong Kong International School; Kodjo Donkor Taale, University of Education (Winneba, Ghana); Christopher Wozny, Dalton State College (GA); and Jason B. Lonon, Spartanburg Day School (SC). In addition, a number of reviewers have asked to remain anonymous. We thank all these individuals as well. If any errors or omissions remain, it is through no fault other than that of the authors. Information about the authors can be found in Appendix A of this volume.

FOREWORD

TO THE READER

Teaching High School Physics has been written to serve as a textbook for physics teacher candidates and as a reference for in-service teachers. The chapters are therefore relatively long and at times complex. Each chapter of this book has been designed to provide the reader with a comprehensive understanding of the subject matter.

Teacher candidates

Do not read this book as though you are reading a novel. Carefully read each chapter and then reflect on it to better comprehend what the authors have to say. Ask questions about what you have read such as the following:

1. What was the authors' purpose for writing this chapter?
2. What key questions are the authors attempting to answer?
3. What are the key concepts of this chapter—the data, the arguments, the answers?
4. What are the main conclusions of this chapter?
5. What is the most important idea, concept, rule, or principle associated with this chapter?

In using this book so, you will be developing and refining some of the scientific reasoning and critical thinking skills you will be trying to teach your students in the not-too-distant future.

Physics teacher educators and in-service teachers

No work such as this can long remain useful if its content remains static. The fact of the matter is that educational practice and classroom cultures are constantly evolving, and a reference work such as this must evolve with these changes if it is to remain useful. The authors encourage physics teacher educators and in-service teachers to write us with any questions, corrections, or suggestions for new content in an effort to help this work retain its timeliness. You may write the authors jointly at authors@teachinghighschoolphysics.net.