

Introduction

Teaching science—what an awesome responsibility! How do teachers develop relationships with their students and cover the entire required curriculum? Where do they find all the materials and resources to engage students in inquiry learning? What do they do to create communities of learners who become active problem solvers? These are just a few of the many questions most science teachers ask themselves every day.

We have written this book to provide practical ideas, strategies, and insights to help you answer these questions. *Secrets to Success for Science Teachers* includes essential topics that teachers face, from setting up a science classroom and establishing routines to planning meaningful instruction and assessment, building literacy, integrating technology, using a plethora of science resources, establishing relationships with families, and networking with colleagues. With these suggestions, you will be on your way to success in creating an academic environment of collaboration and creativity where differences are honored in a community of learners.

AUDIENCE

We have written this book for all educators who specialize in science education. You include middle-level teachers found in elementary schools and secondary teachers in middle schools or junior high schools and high schools. You teach lessons or courses in general science, or your courses address life science, Earth science, physical science, biology, chemistry, physics, or environmental science exclusively.

This book is also valuable for experienced science teachers, as well as department chairs—especially those teachers seeking

guidance and support advancing their professional growth and development. Additionally, we have written this book for preservice teachers enrolled in science methods courses as part of their teacher education programs at universities, colleges, community colleges, or nontraditional licensure programs sponsored by state and county departments of education and school districts.

The concepts and practices presented in this book will benefit every methods instructor in preparing new teachers and help every master teacher, teacher educator, and administrator when mentoring or supervising science teachers.

OVERVIEW

This book provides a detailed overview of effective science education within the diverse context of today's schools and classrooms. Based on research in the field, it contains a multitude of pragmatic guidelines, checklists and resources, and secrets to ensure your immediate success.

Chapter 1 begins with a tour of your school and classroom as you orient yourself for your teaching assignment, setting up your room, establishing policies and procedures, and creating a shared learning environment.

Chapter 2 helps you understand how science standards, state content standards, and district expectations work together to frame your district curriculum.

Chapter 3 focuses on teaching science through an inquiry method that utilizes the scientific method and investigation.

Chapters 4 through 8 address meaningful instruction by knowing your students, identifying objectives, choosing assessments, lesson planning, and selecting purposeful activities accompanied by engaging projects to connect students with their communities.

Chapter 9 describes how to incorporate a variety of resources, including models and specimens, plants and animals, videos, slide presentations, and field trips.

Chapter 10 explores using a variety of technologies in the classroom, working with Web sites, and integrating critical thinking tools.

Chapter 11 suggests a wide range of additional activities to enrich learning, including science programs, science fairs,

competitions, guest speakers, service learning, clubs, and community resources.

Chapter 12 suggests ways to collaborate with colleagues through teams and departments, and other school personnel.

Finally, Chapter 13 encourages teachers to reflect on their practices and plan for their future professional development.

FEATURES

A special feature of each chapter is a highlighted section related to the history of science. You will also find Web references and practical examples from all areas of science integrated throughout the book. At the end of each chapter is a list of professional development activities to extend and personalize the content. Finally, you will see suggestions—secrets that experienced teachers have discovered—to organize, simplify, and enrich the learning that takes place inside and outside the classroom. To this we add a sprinkling of voices from students.

A FINAL NOTE

We invite each of you to adapt the tips and strategies offered in this book to your own unique situations. We hope you will customize and extend the information within each chapter for your teaching style and your students. We think you will soon discover that the entire book offers a wealth of ideas that will help you become more competent, confident, and ready as a science teacher.