



# Science Teacher Guide

*Prepared by Serenity Learning Center*

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## Guide Overview & Purpose

This guide empowers you to inspire young minds (8+) to actively explore and question the world around them through the methods of science. **The guide is focused on Explorer Level students** but also has sections dedicated to Foundation and Scholar Level students.

### Teacher's Role: A Guide on the Path of Discovery

- Model the scientific method:
  - a. Ask a question
  - b. Propose a solution (hypothesis)
  - c. Gather evidence (research, observation, and possibly experiment)
  - d. Analyze your evidence
  - e. Draw conclusions and propose more questions
- Spark curiosity: Fuel a love for learning by presenting insights, experiments and projects to inspire students about the universe on each scientific discipline (Physics, Chemistry, Biology, Geology, Oceanography, Meteorology, Astronomy, Engineering, Anatomy & Physiology, Health & Nutrition, Psychology, Sociology, Anthropology, Archaeology, Engineering, Futurology) and make connections to their individual interests & experiences.
- Empower independent exploration: Equip students with the skills to explore their chosen topics through research (Dictionaries, Indexes, Thesauruses, Topical Guides, recording sources) and hands-on activities (taking notes, measurement, creating models, asking more questions). Search for the "what" and "hows". Looking to discover the "why it matters" and/or "what you can do with this."
- Inspire Documentation: Nurture the skill/habit of documentation. Teach them to record and organize their data, ideas, and observations, building a valuable record of their scientific journey that they can keep and share. IE: Student science journals are a good option: for recording experiments, research findings, and personal reflections.
- Facilitate Collaboration: Encourage students to share their learnings with peers and parents, fostering collaboration and deeper understanding.

## Guiding Principles:

- Pacing and depth: Adapt to each student's learning pace and adjust exploration themes accordingly.
- Holistic/integrated exposure: Cover the full range of scientific disciplines, revisiting each one year after year to build a deeper understanding. Emphasize how the disciplines are related to each other and help the student build a holistic/integrated view of the world through the lens of science.
- Lifelong learning: Foster a passion for curiosity and independent research that extends beyond the classroom. Inspire the students to recognize and apply scientific ways of thinking and applying these skills in daily life.
- KEY: Your role is model scientist, supporter and encourager: Guide students in using scientific methods, not by providing answers but by asking prompting questions. Remember, you are not an encyclopedia! Embrace continuous learning and exploration yourself. Seek out additional resources and let your own curiosity guide your journey with your students.
- Remember: This is just a basic overview. Each topic has many subtopics and complexities. Use this guide as a starting point for further exploration and understanding.

## A Note for Scholar Level Science Mentors

*These students are mature enough to take a more active role in setting goals and the direction of their education. Group academic study is deeper and includes learning about a wide range of potentially conflicting theories. Independent study is more specifically pointed towards personalized long-term goals. Parents and mentors support and encourage as the student self-directs their topics of study. Special attention is given to developing the student's ability to personalize their work, developing a strong sense of self, and helping the student define the purpose of learning and how they could improve their own lives with the work they are doing.*

The students take an active role in creating/preparing/presenting a few of these experiments to the other developmental levels at least a few times throughout the year.

In addition to researching the universe, researching inventions and technology in the past and current fields, analyzing the environmental and economic impact of these technologies, and working towards their own innovations is an objective for these students.