Format of the Textbook

Discovering Life Science is divided into ten units. Within a unit, there are 5 to 12 lessons - a total of 72 lessons. [The Table of Contents is provided at the end of this introduction.]

Each lesson is short, with the content nearly always covered in about 500 words. With diagrams and photos appearing throughout, the core information is typically covered in two pages - an amount of reading well suited to a single night's assignment. For student populations that are less likely to complete work at home, each lesson could easily be read during the first half of a class period, leaving the second half to introduce the corresponding lab or activity. The lab could then be completed during the following class period(s).

All lessons follow the same format. The title is in the form of a question that focuses on the key objective. Of course, students should be able to answer this question after completing the lesson. In addition, behavioral objectives are provided in the teacher's guide.

Exploring Science / Historical Steps

Following the title / question, there is a short story related to the lesson's topic. The story is designed to spark interest and encourage further reading. In most cases, the story incorporates a historically significant scientist or event. As mentioned previously, the scientists are not limited to those of widespread fame; they often are females or people of color whose efforts have for too long been given inadequate credit.

A secondary goal of the Exploring Science / Historical Steps section is to demonstrate that science material can be read simply for enjoyment. While this section often introduces content that will be elaborated upon in the next part, it does so in a less formal style.

In most cases, this section closes with an inference question or a suggestion for further research. These are designated by a "➢".

Teachers may want to use this section to concentrate on students' reading skills. For example, students might be asked to share what key point is being made, what supporting information helped to make the story convincing, or what seems to be foreshadowed in the story.

Content

The key content of the lesson is introduced via a subtitle. Important words are printed in heavy type, and a pronunciation guide is provided (in parentheses) after the more difficult words.

To Do Yourself

Simple activities, entitled **To Do Yourself,** are provided for most lessons. Students are able to perform most of these investigations in small groups or by themselves, although a few require adult assistance. Materials are simple and inexpensive. Each activity is directly related to the content of the lesson, although some may extend that content slightly. Suggestions for handling each activity, and expected outcomes, are provided in the teacher's guide.

Lesson Reviews

The review material at the end of each lesson contains three or more parts, indicated by Roman numerals. Within each part, there is generally more than one question. Types of questions include fill-in-the-blanks, multiple choice, matching, arranging the steps of a process in the correct order, true/false (often with the requirement that false statements be corrected). A final question challenges the student to infer or to predict; this answer will require a complete sentence or two.

Unit Reviews

All units end with a review of the content, entitled **Review What You Know**. The unit review is divided into four parts. **Part A** reviews material in the unit in a motivational context. It is always a puzzle of some sort. **Part B** is a set of multiple-choice questions. **Part C** is visually oriented, getting at student learning in a different modality. **Part D** consists of one or more projects that can be used to extend the unit or to challenge the motivated students to deepen their understanding. Most of these could be used as group activities; many will take more than a single day to complete.

Teachers may find it useful to look at **Part D** before they begin a unit. In some cases, they may want students (or a select few students) to work on a project while the unit is being taught. On the other hand, working on a project *after* the unit has been taught is a good way to reinforce the ideas of the unit.

Summing Up / Cumulative Reviews

Except for Unit 1, odd-numbered units are followed by a cumulative review. As with **Part C** of the unit reviews, the cumulative review relies largely on a visual modality.

In general, half or more of each review is concerned with the content of the previous two units, while the remaining parts of the review are on earlier units. Since there is a cumulative review every two units (starting with Unit 3) this plan ensures that all of the units are reviewed intensively. In all cases, the questions in **Summing Up** are keyed in this *Teacher's Guide* to the units that they cover.

Support for Thinking Skills

In addition to the strategies mentioned previously (the inference question at the end of each **Exploring Science / Historical Steps** section, the inference question at the end of each lesson's **Review**, and the **To Do Yourself** hands-on activities that challenge students to 'go deeper'), two entire lessons in Unit 1 are devoted to the thinking strategies used by scientists. One lesson focuses on the scientific method. The second lesson stresses the following: pattern recognition, inferring, avoiding biases, incorporating controls, and the role of verification.

Careers in Life Science

A careers page is provided after the first unit, and then after each even-numbered unit. These pages introduce careers that are related to that particular unit. At least two careers are presented on each page; the first career requires less preparation or training, while the others require more extensive education.

Format of the Teacher's Guide

The teacher's guide consists of the following twelve google doc files; this one; the author's / copyright page; and one for each of the book's ten units. Within each unit's file, the information appears lesson by lesson, using the same format as the textbook's lessons. There is one exception to the previous statement; for many of the lessons, I've added a section entitled **Reinforce / Enrich**. As the name indicates, the comments and videos included in this section reinforce or expand upon the lesson's content

Videos

I used some of these videos during my career; most, I have located since retiring. I base my selection of videos entirely on the content of each video. I have not vetted the people or organizations behind each video, and I welcome feedback in this regard.

I have chosen videos that fit two categories. First, those that I consider to be "best fits" for *all* middle school students. The content of these videos consists of terms and concepts that most life science courses cover. They are brief (rarely over 6 minutes), clearly narrated and illustrated, and avoid advanced terminology. They also omit distracting triggers (which, in most cases, means images or comments that adolescents would interpret as sexual).

The second category are videos that should appeal to students who are interested in going a bit deeper.

Sometimes, a video meets both categories - in sequence. That is, the first portion contains information common to most life science courses, and the remaining portion contains material more common to high school biology courses.

While the videos come from a variety of people and organizations, teachers will notice that quite a few are from the following sources:

Crash Course With their rapid pace as well as their advanced content, these are usually better suited as tools for review by teachers or enrichment opportunities for highly motivated students. Note: The Crash Course biology series is now produced in collaboration with the HHMI Biointeractive organization.

HHMI Biointeractive Videos from this organization often intersperse actual film with impressive graphics. A visit to their website is highly recommended.

Stated Clearly The name of this organization was well chosen! Their website states - "We produce animations on genetics, evolution, biology, and chemistry that are in line with NGSS standards for use in classrooms."
[For free guided questions for five of these videos, see my TPT store.]

Science Sauce The content, illustrations, and pace of these brief videos are remarkably well matched with Discovering Life Science.

WARNING: Before displaying the opening scene of any YouTube video, make certain to expand the screen to full size. This will prevent showing students YouTube's "suggested videos" (commonly displayed at the right); these suggested videos sometimes have no connection to the chosen video and may even contain images or titles not intended for adolescents.