

# Discovering Life Science

## Goals and Rationale

Discovering Life Science is well suited for middle school teachers who ....

A) ....prefer **brief lessons**.... because...

- 1) they plan to challenge students to introduce themselves to most of the basic content, via brief homework assignments and review questions.

Nearly all of this book's 72 lessons consist of two or three heavily-illustrated pages. Students are rarely required to read more than one or two pages per assignment..

- or -

- 2) they plan to have students read the lessons in class. While the content of Discovering Life Science matches well with that of any good life science textbook, the writing style is straight-forward, with a preponderance of short sentences. The text uses a two-column format - a less intimidating layout for young readers. Large, clearly-labeled illustrations are integrated throughout. Every lesson ends with review questions, as does each unit.

- or -

- 3) they want to implement a compromise between the two approaches above. For example, since each lesson begins with an anecdote, these few paragraphs could be read in class, with the remainder of each lesson completed for homework.

B) ... **teach outlining** (and appreciate having model versions available for comparison).

Teaching outlining is an excellent means to promote analysis and synthesis. To outline written paragraphs a student must break information into pieces, and then transform the information into a pattern. Brains love patterns! A good outline is a pattern that facilitates 'covering-and-self-quizzing' - an efficient means of committing content to memory.

With Discovering Life Science, students are commonly able to produce an outline on one side of a sheet of paper. Of course, for even shorter assignments, the teacher may require students to outline only a few paragraphs of a lesson.

Prior to assigning the first outline, teachers may introduce students to the basics of outlining via materials that are posted on [lifesciencetextbook.com](http://lifesciencetextbook.com).

For each assigned outline, teachers have students compare their attempts to a model version; these are free to teachers who purchase a book. In this way, even teachers with large classes can readily support their students in developing this vital skill. Depending on the group of students, some teachers also have pairs or small groups of students assist each other.

Teachers with small classes might opt to go further. Posted to [lifesciencetextbook.com](http://lifesciencetextbook.com) is a detailed description of an efficient means of 'skill-checking' students' outlines. This might be done a few times during the first several weeks of the school year. The intent is to facilitate improvement - not 'grade' students' attempts.

C) ... devote much of their class time to **hands-on activities** that reinforce the content;

D) ... **incorporate many of their own materials** and activities;

E) ... prefer to give their students a **break from screen work**, but need a low-cost book.

## **F) ...agree that the following elements are essential:**

- **An optimistic outlook**

In an honest, but positive manner, Discovering Life Science informs young people of historical and recent events related to biology - including those that threaten the planet - such as pollution and global warming. However, students learn that science, when practiced thoughtfully, is a means to make things better. They are encouraged to recognize that the actions of individuals are vital.

- **A fact-based approach**

Topics like evolution, humanity's influence on the planet, variations in gender identity, and data-driven advances in medicine (such as vaccines), are presented as facts, not opinions.

- **Up-to-date material**

Perhaps the most challenging part of writing a middle school textbook is deciding what not to include. For the most part, I deferred to the authors of Globe Life Science as I updated their book. However, a look at the index (below) will confirm that Discovering Life Science is a rather comprehensive life science textbook.

For example, as noted at the end of this file, I added three lessons that introduce students to terms such as COVID-19, mRNA vaccines, CRISPR, stem cells, genetically modified organisms (such as GMO foods), and endosymbiosis. I did not, however, include terms such as transcription, translation, heterozygous, or genetic drift.

- **Support for racial, ethnic and gender diversity**

The book on which Discovering Life Science was based set a high bar with its inclusion of content and images that portray society as multicultural, and its praise for the contributions of minorities and women. Discovering Life Science continues, and extends, this tradition.

The important work of people of color like Angela Ferguson, Ernest Just, and Charles Drew is applauded. In addition to Dr. Ferguson, women scientists in the book include Rachel Carson, Emmanuelle Charpentier, Jennifer Doudna, Rosalind Franklin, Jane Goodall, Barbara McClintock, Lynn Margulis, Valerie Pence, Florence Sabin, and Suzanne Simard. A complete list of the scientists mentioned in the book is provided below.

In a lesson on the genetic determination of gender, students are informed that some people identify as genders that don't match their biology, and some people consider themselves to be non-binary.

## **So ...is this a textbook, a workbook, or a resource?**

Yes! Some teachers opt to obtain a single book and occasionally photocopy (or project to a screen) one of the brief lessons. As described above, this strategy works particularly well to support students in developing their outlining skills.

Like most workbooks, Discovering Life Science is available only in paperback. If each student owns a book, they are able to underline, make notes in the margins, and record their answers to the review questions.

For teachers who intend to use the book for multiple years, students can be required to put their answers on looseleaf paper. [Note: For the book to last for multiple years, it is highly recommended that the pages be removed, hole-punched, and kept in three-ring binders.]