

• Lecture 5: Textbook reading skills

英文閱讀方法

SQ3R (Survey, Question, Read, Recite/Recall, Review)

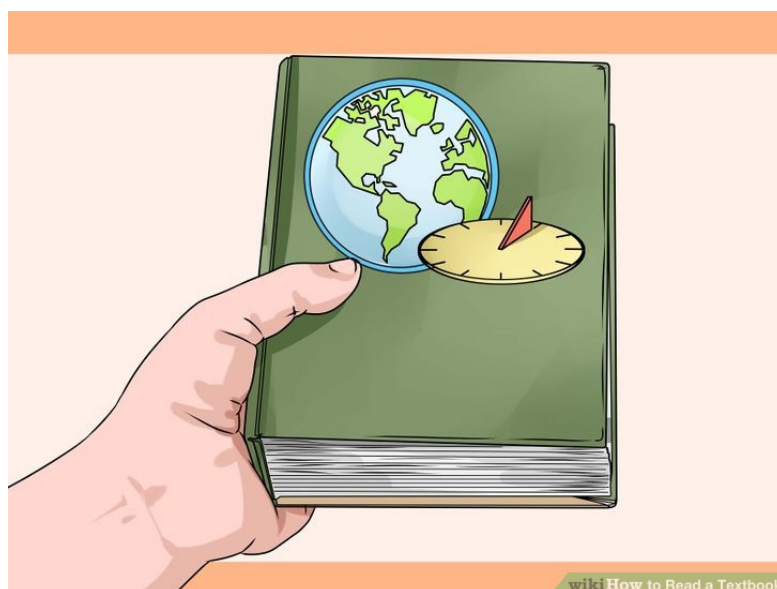


- **閱讀前**: 預測作者、瀏覽目錄。(產生全文概念/主旨)。將標題改成問句。
- **閱讀中**: 全文閱讀, 回想重點。找出問題的答案, 並以圖表方式如 **concept maps, flow chart, table, vertical tree diagram** 等整理內容。
- **閱讀後**: 複習整理文章架構和重點。建立心智概念圖 (**Mind Map**)
- 英文是第二語言, 但需要自己的母語作為依歸, 先確定自己真正的熟悉懂中文。
- 將學習心態由 **少量精讀 (learning to read)** 轉為 **廣泛閱讀 (reading to learn)**

Study Skills - How to Read Textbooks

How to Read a Textbook

- <http://www.wikihow.com/Read-a-Textbook>



Before you begin to read your assignment:

1. Look at the way the material is organized.
2. Read **the titles** and **sub headings**.
3. Be sure to read all the captions for pictures.
4. Read the title and the axes labels for charts and graphs.
5. If there are questions at the end of the material, read them. You will have a good idea which concepts are of key importance.

GLOBAL
EDITION



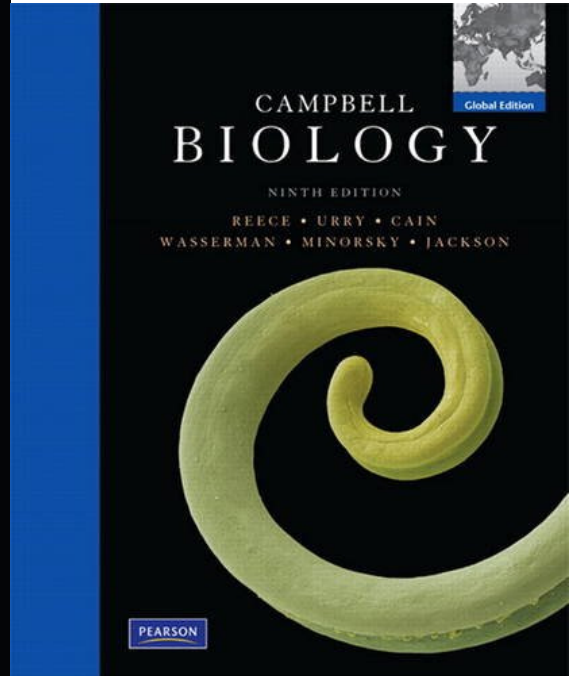
Biology

A Global Approach

TENTH EDITION

Campbell • Reece • Urry • Cain • Wasserman • Minorsky • Jackson

Skim Ch. 1 P. 18-23



While you read:

1. Read the entire paragraph or section without making notes or underlining anything.
2. Think about what the major ideas are in contrast to the details.

The Role of Hypotheses in Inquiry

In science, a **hypothesis** is a tentative answer to a well-framed question—an explanation on trial. It is usually a rational accounting for a set of observations, based on the available data and guided by inductive reasoning. A scientific hypothesis leads to predictions that can be tested by making additional observations or by performing experiments.

We all use hypotheses in solving everyday problems. Let's say, for example, that your flashlight fails during a camp-out. That's an observation. The question is obvious: Why doesn't the flashlight work? Two reasonable hypotheses based on your experience are that (1) the batteries in the flashlight are dead or (2) the bulb is burnt out. Each of these alternative hypotheses leads to predictions you can test with experiments. For example, the dead-battery hypothesis predicts that replacing the batteries will fix the problem. **Figure 1.24** diagrams this campground inquiry. Of course, we rarely dissect our thought processes this way when we are solving a problem using hypotheses, predictions, and experiments. But the hypothesis-based nature of science clearly has its origins in the human tendency to figure things out by trial and error.

Figure 1.24

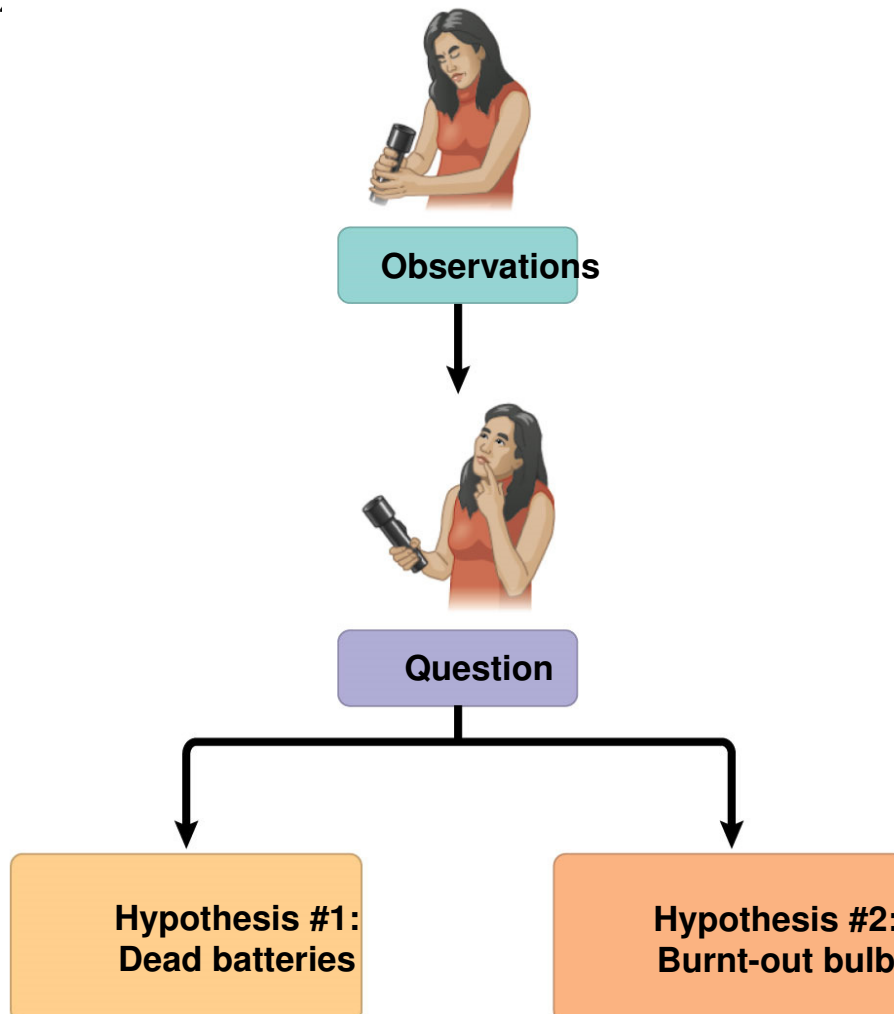
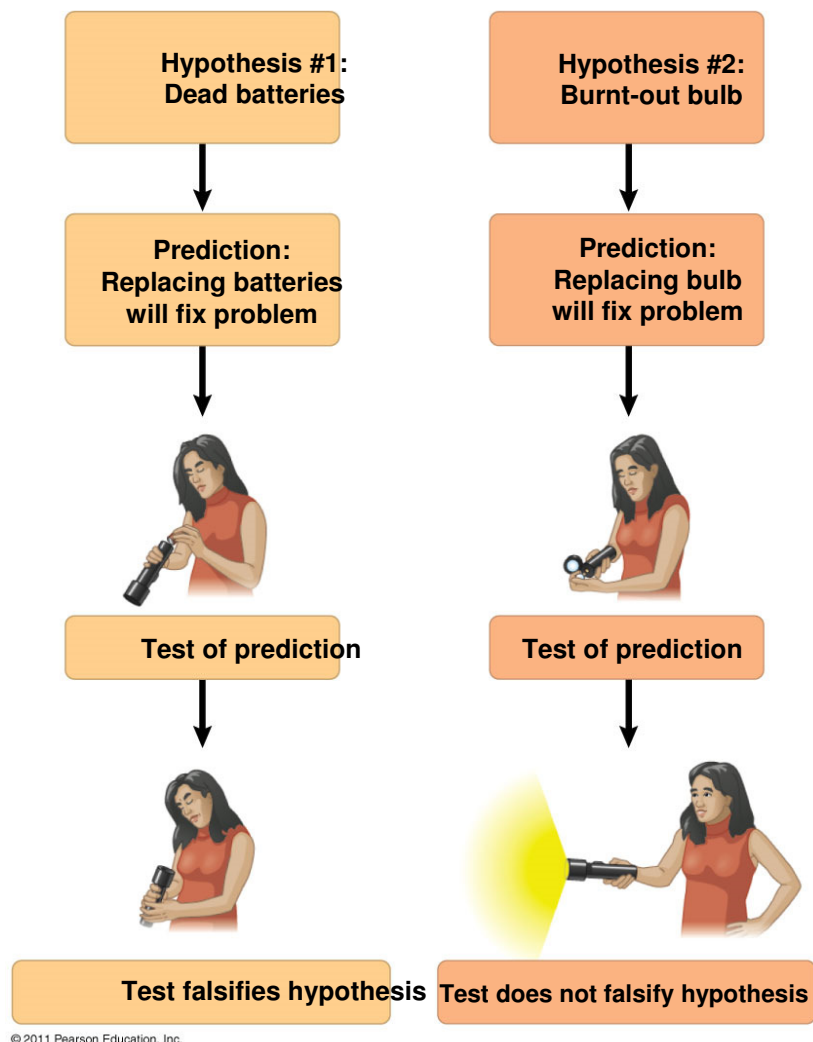


Figure 1.24b



After reading a paragraph or section:

1. Use a pen or pencil, not a highlighter. With a pen or pencil, you can paraphrase and add margin notes.
2. **Marking your textbook**
 - a. **Lines:**
 - Highlighted for major ideas.
 - single lines for minor ideas or explanation of main ideas.
 - b. **Margin notes:**

In the left/right margin write . . .

 1. Memory phrases
 2. **Summaries and paraphrases** of main ideas and details (These are answers of predicted test questions, see below)
 3. Predicted test questions (based on main ideas)

3. Definitions and Examples

- Write “def” or “ex” in the margin.
- Underline definitions in thick and (put parenthesis around examples)

4. Important concepts: Put a circle or box around these to make them stand out.

5. Captions (a title or explanation for a picture): underline and mark these just as you would the text.

The Role of Hypotheses in Inquiry ← How to make a hypothesis?

def In science, a **hypothesis** is a tentative answer to a well-framed question—an explanation on trial. It is usually a rational accounting for a set of observations, based on the available data and guided by inductive reasoning. **A scientific hypothesis leads to predictions** that can be tested by making additional observations or by performing experiments.

ex We all use hypotheses in solving everyday problems. Let's say, for example, that **your flashlight fails during a camp-out**. That's an **observation**. The question is obvious: Why doesn't the flashlight work? Two **reasonable hypotheses** based on your experience are that (1) the batteries in the flashlight are dead or (2) the bulb is burnt out. Each of these alternative hypotheses leads to predictions you can test with experiments.

ex For example, **the dead-battery hypothesis predicts** that replacing the batteries will fix the problem. **Figure 1.24** diagrams this campground inquiry. Of course, we rarely dissect our thought processes this way when we are **solving a problem using hypotheses, predictions, and experiments.** But the hypothesis-based nature of science clearly has its origins in the human tendency to figure things out by **trial and error.**

Step

def

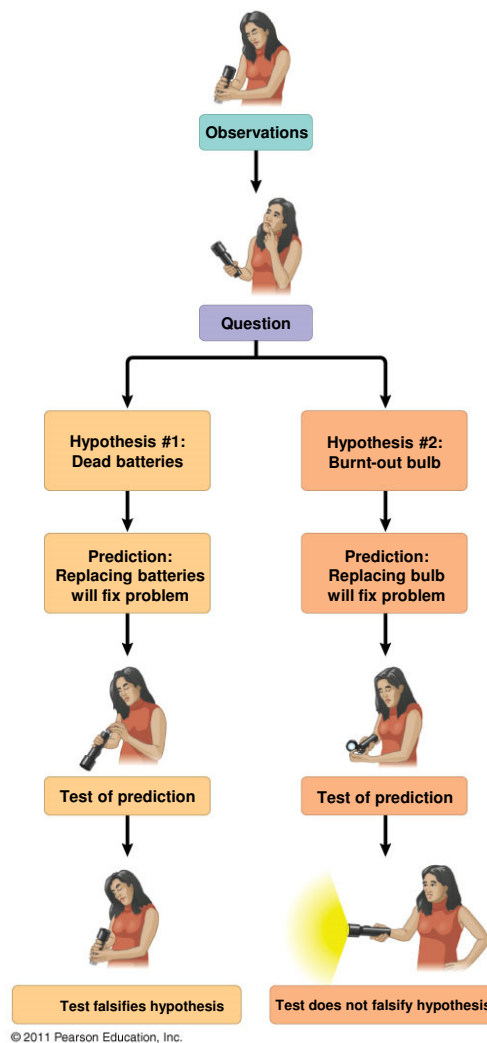
Answer:
>problem
>hypothesis
>prediction
>test(experiments)

The Role of Hypotheses in Inquiry

- A **hypothesis** is a tentative answer to a well-framed question
- A **scientific hypothesis** leads to **predictions** that can be tested by observation or experimentation

- For example,
 - Observation: **Your flashlight doesn't work**
 - Question: **Why doesn't your flashlight work?**
 - Hypothesis 1: The batteries are dead
 - Hypothesis 2: The bulb is burnt out
- Both these hypotheses are testable

Figure 1.24



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The Role of Hypotheses in Inquiry

How to make a hypothesis?

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Marking tips for textbook readings

- Dissect out paragraph structures so that you learn the author's logic (**topic**, **supporting** and **concluding** sentences)
- Mark **key term/concept**, **def**, **ex**, **steps**, **fact**, **main idea** and explanation of main ideas
- However, too many markings are unrealistic (Try not to mark over 30%)
- In English, each paragraph usually just contains one major idea. Remember this when you write.

Paragraph structure: topic sentence

https://www.youtube.com/watch?v=NLzKqujmdGk&index=11&list=PLN3kZ8bfmMJN2-EdLyE7_rOZo8o3lpFiv



Which of the following are **strong topic sentences and which are **weak? Why?** (Part 1):**

1. The roads were bad when I drove to Whistler.
2. Congestion at the airport parking lot is causing problems for travellers.
3. Three ways to improve your language skills.
4. The importance of a ban on smoking in all public parks will be the subject of this paragraph.
5. Life science is important.

Answers (Part 1)

1. **too narrow**

2. **Good topic sentence**

3. **incomplete sentence**

4. **don't announce the topic**

5. **too broad**

Rewrite the sentences in part one so that they are good topic sentences

Possible Answers (Part 2)

1. I learned the importance of safe driving on a trip to Whistler.
2. Good
3. There are three effective ways to improve your language skills.
4. Vancouver should ban smoking in all public parks.
5. Life science training is important for students to enter medical researches.



A Case Study in Scientific Inquiry: Investigating Mimicry in Snake Populations

- Many poisonous species are brightly colored, which warns potential predators
- Mimics are harmless species that closely resemble poisonous species
- Henry Bates hypothesized that this mimicry evolved in harmless species as an evolutionary adaptation that reduces their chances of being eaten

Scarlet kingsnake (nonvenomous)



Key

-  Range of scarlet kingsnake only
-  Overlapping ranges of scarlet kingsnake and eastern coral snake



Eastern coral snake
(venomous)



Scarlet kingsnake (nonvenomous)

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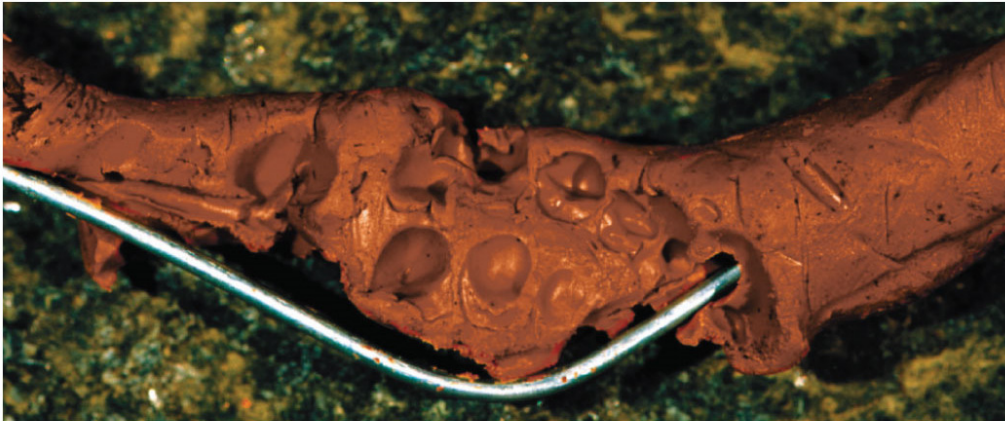
A Case Study in Scientific Inquiry: Investigating Mimicry in Snake Populations

Now that we have highlighted the key features of scientific inquiry—making observations and forming and testing hypotheses—you should be able to recognize these features in a case study of actual scientific research.

The story begins with a set of observations and inductive generalizations. Many poisonous animals are brightly colored, often with distinctive patterns that stand out against the background. This is called *warning coloration* because it apparently signals “dangerous species” to potential predators. But there are also mimics. These imposters look like poisonous species but are actually harmless. A question that follows from these observations is: What is the function of such mimicry? A reasonable hypothesis is that the “deception” is an evolutionary adaptation that reduces the harmless animal’s risk of being eaten because predators mistake it for the poisonous species. This hypothesis was first formulated by British scientist Henry Bates in 1862.



(a) Artificial kingsnake



(b) Brown artificial snake that has been attacked

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homework

- Identify topic sentences among these paragraphs in this section
- Based on SQ3R, propose a question and an answer to summarize this section
- Practice marking tips and upload your marking figure