

*Students are often asked to read material and solve problems that are new to them. This skill station develops a strategy for understanding new material.*

## Answering the Unknown

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Reading a textbook often feels like reading a foreign language. Vocabulary words and concepts are new, and problems sometimes seem impossible to solve. This exercise provides a strategy for understanding complex material.

Your instructor gives you the following question to answer:

The venomous snakes of Madagascar are all rear-fanged colubrids. These snakes differ greatly from mainland African varieties of the Elapidae, Hydrophiidae, Viperidae, and Crotalidae snake families.

What forces of natural selection and speciation would result in the observed distribution of snake varieties in Madagascar?

Unless you are a snake expert, you probably cannot answer this question. However, you may have some background knowledge to approach the issue. What do you do next?

Researchers who study learning suggest you break unfamiliar material into small parts, investigate, then assemble the parts in your own words. Follow this plan:

1. **Identify the topic and anything you already know about the topic.** Circle the question's topic, and tally your existing knowledge.
2. **Identify vocabulary words and concepts you do not understand.** Make a vocabulary list, or underline concepts in the paragraph that are unfamiliar to you.
3. **List the resources you could use to answer your questions from step #2.** These include your classmates, instructor, reference materials, the internet, your textbook. Pair resources with unknown vocabulary or concepts.
4. **Explore those resources, finding the answers to the unknown words and concepts.** This may take time, but care here will result in better understanding.
5. **Now, in your own words, summarize the material or answer the question.** Check your understanding against another student's, or with some other knowledgeable person.

This process works well for solving complex questions. *Inventory* your knowledge on a subject. Decide what you *need to learn* before you can answer the question. Use your *resources* to obtain the necessary information. Then, use your creativity and new-found knowledge to *solve the problem* of understanding!

## Answering the Unknown Teaching Notes

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Approximate Time Required

Skill Station: ~15 min class time

Group processing: 5 min after exercise

- A. **Explain the Need:** Students often give up when they read something they do not understand. This skill station empowers them to approach the unknown by introducing a method to dismantle difficult material. As they gain more knowledge, the material becomes easier, encouraging further learning.
- B. **Define and Model:** Combine this skill station with reading assignments, research projects, or when students read the primary literature. This approach is also used during problem-based learning<sup>1</sup>.

Tailor the reading in this skill station to your course content.

- C. **Practice:** Students can do this skill station in class, as groups, or individually outside of class. Assign and collect the results of steps 1-5 to monitor their progress. Once students are proficient, this approach is good for answering essay questions on take-home examinations.
- D. **Evaluate:** Ask students to share their progress with their groups.
- E. **Feedback/Reflection:** Ask students to reflect on how they can improve their learning skills. Are there other approaches that work for students to learn complex material?

<sup>1</sup><http://www.udel.edu/pbl/>