



How to Use the Short Stories

We hope you find *The Story Behind the Science* stories and support materials useful for helping your students better understand significant science ideas while also learning important lessons about how science works. Many students are naturally drawn to stories about how science is actually done because such stories provide a context that is more interesting and personable. Too often science comes across to students as unapproachable and devoid of human involvement. *The Story Behind the Science* project is directed toward the following goals:

- Improving students' understanding of how fundamental science ideas came to be generated and eventually accepted by the scientific community;
- Improving students' understanding of the nature of science (what science is and how it works);
- Showing the human side of science (too many bright students opt out of science because they wrongly see it as a boring, bland and solitary pursuit); and
- Providing a more accurate backdrop for other science content that students will learn in class.

While no single way exists to use these stories, effective implementation efforts have the following common features:

- Students are explicitly shown the connections between the short stories and the content of the course;
- The instructor explicitly teaches about the character of scientific knowledge, how science is done, and the workings of scientists (see [The Characteristics of Science: Understanding Scientists and their Work](#)) and explicitly addresses this in class both directly and in the context of teaching science content;
- Students are encouraged to share their ideas about issues in the short stories and listen to their classmates' ideas;
- Students are assessed on information about the characteristics of science and scientists addressed in the short stories (students tend to place greater value on what is assessed!).

The following are some of the ways post-secondary instructors have used the stories with their students.

1. Complete individually outside of class time. Simply have students read the stories and provide credit to students who thoughtfully answer the questions found within the stories. Key to this approach is making clear to students the importance of carefully reading the stories

and thoughtfully and thoroughly responding to the questions. This approach is more effective when, in the lecture, two or three presentation slides are incorporated that reference the stories and key ideas they illustrate about the nature of science.

2. Complete in small groups in or outside of class time. Have students read the stories individually outside of class, but complete the questions in small groups either in or out of class. In this approach the instructor has fewer student responses to review and assess, and deeper thinking about the questions is promoted since students have to reach a consensus in the group. However, this approach may fail to capture a minority view that is not included in the group's final answer. Care must be taken to ensure all students are on task and that all students' views are considered in the group. See [Tips for Structuring Group Work](#) for more information on how to do this.

3. Complete outside of class followed by small or whole group discussion in class. Students are more likely to take seriously assignments that their instructor values and addresses during class time. This approach permits the instructor to emphasize the science content in the stories, how it was generated and accepted, and important lessons about the nature of science. And as students share their ideas, the instructor can assess students' thinking and interact with them to improve their understanding about the nature of science. See [Tips for Creating Effective Class Discussions](#) for assistance to create a class discussion.

4. Complete interactively in class. The instructor reads a small section of a story and then has students turn to their neighbors and discuss the question that is inserted in the story. This can be accomplished by placing the question on a presentation slide for all to see. The instructor may then wish to follow this with a relevant demonstration or investigation in the laboratory, returning to the story at a later time. In this way, suspense builds over time and students have the story as a focal point for laboratory investigations or the demonstrations they observe. Key to the success of this approach is not making the full story available to students in advance, and having instructional activities closely follow the same line of thinking that was modeled in the short story. This approach is best suited for a whole class demonstration or laboratory section.

Please share with us other ways you have successfully used the short stories with your students. Contact the Project PI at mclough@iastate.edu.



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