

## Chapter 8

# Using the Scientific Method to Solve Literary Problems

**Leia Faith Davis**  
Sullivan East High School, USA

### ABSTRACT

*In this chapter, the author outlines cross-curricular lessons that have been developed using commonly taught pieces of “classic” literature to facilitate student connections in science. The lessons attempt to use the literature as a basis for building activities that allow students to practice and review scientific concepts in biology and chemistry. The chapter includes strategies for implementation such as finding appropriate literature, facilitating work with other teachers, and building connections to increase student outcomes. This chapter begins with a discussion of basic scientific method and its relationship to literary analysis. The activities that follow demonstrate some specific methods that practitioners can immediately apply in their classrooms.*

### INTRODUCTION

I am so lucky to have a school community that has confidence in my abilities—sometimes more than even I have. When students were offered “Appalachian Studies” on their course registration, not only did they jump on the opportunity to register; they also ran to the principal to suggest that I be the teacher. As an English Language Arts teacher, I was confident that I could give my students a great introduction to Appalachian literature and authors, but I knew that to do justice to a true study of Appalachia, I wanted to integrate as many subjects as possible. With no leftover lesson plans from retired teachers, and two sets of uncracked books on Appalachia, I would basically be inventing a curriculum. But my wonderful school community—my principal, my colleagues, and my students—were ecstatic about what I would develop. However, I wasn’t even sure where to start!

I suppose that is not entirely accurate. I have lived in Appalachia my entire life, and I took some courses in college due to my own personal interest. The content of this course, though, would be entirely up to me. I agreed to teach the class on the condition that it not be a literature course, but rather a true survey course—one that surveys all the aspects of the region including topics in history and culture,

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ecology and economics, and even geology and botany. After all, some of the major issues affecting the culture of the region stem from problems facing its flora and fauna.

Currently in the course, I strive to create opportunities for my students to connect to their other classes. I want them to see that identifying trees matters, because it is a rarity to find a fruiting American Chestnut in their yard. I want them to understand that a local economy based on coal mining is a troubled one, pollution being a major catalyst for both environmental and economic problems. I want them to find the math, science, and culture my grandparents and aunts engrained in my upbringing by gardening, canning, and cooking. I want them to know that they are the key to preserving this culture that is both perpetuated and threatened by ever-growing technology and communication.

In my professional opinion, students need more time dedicated to helping them make connections between all of their separate subjects. In the current “traditional” style of high-school scheduling, students study each subject separately from all the others. Although students may study both American literature and American history chronologically, they may not have the classes during the same semester. Students may balance equations both in algebra and in chemistry, but rarely do those teachers plan together to show students the similarities in the processes. Since “Appalachian Studies” is an elective course, I have the freedom to structure and plan lessons in any way that I see fit, and I try to use that freedom to build connections. I experiment with my lessons, my class structure, and even my best practices, to see how my students react and learn.

Probably the best benefit of this class is how easy it is for me to exemplify my teaching philosophy. I firmly believe that the key to student learning lies in the ability of students to connect new information with their lives and interests. As Kylene Beers and Robert E. Probst (2007) note in *Disruptive Thinking*, “It is only when they link text to their own experiences that the text will begin to matter, and it may then evoke more rigorous attention, reflection, and analysis” (p. 24). If a student is bored by a subject, he does not care if he remembers it. But if a student is reminded of that subject due to its connection to his everyday life and interests, he cannot help but remember it. Although most of us in education think that what we are teaching will help students in their professional lives, our students do not always see the value. And if we are truly honest with ourselves, the value of certain “tested” skills to our students in their adult years is basically nonexistent. We want students who can be successful in college and professional careers, but we have students who may not graduate and who may work for minimum wage. We have students who are victims of their circumstances and live in a socioeconomic state that they may never overcome. It is our job as educators to give students every opportunity and tool that we can, in order to help them overcome any challenge that stands in the way of their success.

I strongly believe that the best way to help one of these students—the ones who are statistically more likely to fail—is to help them make connections. If a graduate can connect something as basic as the scientific method to, say, fixing a broken machine in a factory, that student has graduated with a marketable skill. If I can show students that the scientific method works outside of the science classroom, then I have been a successful teacher. If I can explain writing in terms of a mathematical equation, then students who think they are “math kids” and not “English kids” can connect to words in a way that they never saw as possible. Those connections may not help them remember Algebra, but may be able to help them learn to learn. The best thing we can teach our students is to want to know more, to seek other ideas and answers, and to consider as many sources as possible. “Appalachian Studies” make this easy because I can reach students by letting them lead the learning. English Language Arts provides a bigger challenge, though not an impossible one; in my class, helping students make connections is my

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