We describe a short (<50 minutes) activity using news articles from sources such as Science Daily to teach students the steps of the scientific method and the difference between primary and secondary literature sources. The flexibility in choosing news articles to examine allowed us to tailor the activity to the specific interests of our student group. This exercise is particularly useful in situations where there is no laboratory component to a course, the time devoted to teaching the scientific method is constrained, or the topic is not presented adequately in the textbook utilized for the course.

Key Words: Scientific method; current events; hypothesis generation.

Classroom presentations of the scientific method usually involve introducing the process as a series of succinct steps that researchers use to investigate questions (for examples, see Sterner, 1998; Sadava et al., 2011). Ideally, students have the opportunity to practice this method by performing investigations in a laboratory setting. In some instances, this approach is not practical—courses may not contain a laboratory component or there may be constraints on the time allotted to this topic in the course curriculum.

Here, we describe an approach to teaching the scientific method using news articles that describe current journal manuscripts. Our goals for this lesson were to teach students the steps of the scientific method, identification of null and alternative hypotheses, and the difference between primary and secondary literature sources. Ultimately, we aimed to show students that critical thinking and scientific inquiry can and should be applied when evaluating scientific findings presented in the news media or in scientific journals.

A short pre-activity lecture was given to introduce students to the concepts of null and alternative hypotheses. We also introduced the basic steps of the scientific method by leading students through an in-class hypothetical study. The in-class example that we used involved a proposed double-blind study for testing a hypothetical drug. We explained that the double-blind approach is the “gold standard” in drug testing but is not always a practical approach in other areas of research (e.g., ecology or theoretical research). One area that was particularly stressed was that scientists do not undertake investigations to prove a specific hypothesis; rather, scientists accept or reject hypotheses on the basis of data generated in their studies.

Students were then provided with a copy of a current news item that summarized a scientific journal article. Summaries of current scientific journal articles are presented in media outlets such as The New York Times, Science Times, Science Daily, or Science News Headlines (Yahoo News). These summaries are normally one page in length, and students can read the entire article in <5 minutes. Along with the news item, students were also provided the following questions to answer.

1. What were the initial observations that led to the inception of this study?
2. What was the alternative hypothesis for this study?
3. What was the null hypothesis for this study?
4. How did the scientists conduct this study (what was their experimental design)?
5. What were the results of the study?
6. Which primary literature source was this study published in?
7. Which hypothesis was supported by the data?

Our students took about 20 minutes to complete the questions (students can work independently or in groups). This exercise was followed by a discussion of their answers. In all, the entire lesson fit into one 50-minute lecture period. Although many introductory biology textbooks have a section on the scientific method (our text for this course [Bidlack & Jansky, 2011] did not) and often include examples of studies intended to show students the scientific method in practice (for an example, see Sadava et al., 2011), we found using current news articles more engaging for our students. Most of the students in our Introductory Plant Biology course were majoring in Turfgrass Science; thus, we chose an article directly related to golf course maintenance (http://www.sciencedaily.com/releases/2012/01/120131150036.htm) for this exercise. One of the
students even shared the article with his manager at a local golf course. Thus, not only were the students engaged while they were in the classroom, but they also took the initiative to share what they had learned with other members of the community.

References


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