

Bringing Ocean Science News To the Classroom

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Science is often taught as a collection of facts and in isolation of other subjects. Thus, many students are not making basic connections within science and between other disciplines. In order to truly understand science – students need to comprehend and become literate in fundamental concepts as well as their connection between topics. If there is one thing that scientists and educators can agree on, it is that our focus should be to prepare students to become scientifically literate citizens. National science education reports such as *Project 2061*, *U. S. Commission on Ocean Policy*, and the *National Science Education Standards* have acknowledged the importance of learning the process of science through learning goals related to science inquiry and critical thinking skills and doing so in authentic settings^{1,2,3}. This includes learning experiences derived from current events. Science is a field that is ever-evolving as researchers continue to make discoveries and ask new questions about Earth's systems. It is the constant stream of new information that is one of the most exciting features of being a science teacher. By incorporating relevant and current science topics and research into classroom lessons, we can motivate students to learn and even change their attitudes toward science⁴. Students who are exposed to current scientific research and its questions and methods, discover that our world contains more questions than answers. Students can hone their critical reasoning skills and apply their creativity by discussing scientists' questions, experiment design, and hypotheses – an experience that can empower students and teachers⁴.

Critical source

Over a lifetime, much of an individual's exposure to advances in science occurs outside of school through the print and electronic media⁵. Coverage of science issues in the press is widespread particularly as accessibility to sources of information becomes virtually effortless. The Internet makes nearly all forms of popular, as well as professional, science literature readily available to the public. Online information sources contribute to an educational landscape capable of near real-time access to news coverage, scientific data, and critical analyses of Earth system science events. Traditional science textbooks, while providing quality educational content, have revision cycles that are longer than online information sources and can't be expected to keep up. Science presented from a textbook can also lack relevancy and context to the student, leading to disconnected learning and limited understanding of scientific concepts⁶.

Toward Science Literacy – One Teacher's Journey

Reading is an essential part of science literacy, but what, when, and how can we incorporate reading in the science classroom? Like many of my colleagues, I avoided relying on the textbook by engaging students in lectures, hands-on activities, demonstrations, and videos. Unfortunately, as each year passed, my students read less while I worked harder.

I wanted students to become the scientifically literate citizens envisioned in the *National Science Education Standards*: students who read science, enjoy reading science, and even experience the passion I feel for the natural world. However, with 65% of incoming freshmen at my school reading below the sixth-grade level, it was clear that our science curriculum, especially the textbook, did not include motivating or accessible reading for most students. To bring reading back into our science classrooms, my colleague and I designed four quarterly reading projects with yearlong literacy routines that we use successfully with our ninth-grade students.

Our goals in beginning this inquiry were to improve student's attitudes toward science reading and give students the tools to become lifelong science readers. Three years into our inquiry, one thing is clear: Our students have become more capable and more willing science readers. -Janet Creech is a teacher at Woodside High School, Woodside, CA. Read the entire story in the February 2006 edition of *The Science Teacher (NSTA)*⁷

As a result, students often fail to recognize and connect related scientific concepts to the social issues that prompt underlying news coverage of significant events. Therefore, there is a strong case to be made for developing in our students an aptitude and the skills required to read science news with a critical eye.

Study a study

Much of what is reported in current news articles is in the form of reports on “studies” or recent research findings. There is merit in offering students the opportunity to ‘study a study.’ Using guiding questions to support students’ critical reading, this approach can help students use their existing knowledge (misconceptions included) to expand their knowledge and perceptions of science. A series of suggested guiding questions are listed below⁸:

- How was the science investigation conducted?
- What is the evidence for the conclusion?
- What is the social context? Of the science? Of the source?
- What do others say? Other scientists? Other sources?
- What is the relevance of the work? To me? To others?
- What else would I need to know before I can form an opinion?

Oceans in the News

One of the goals of COSEE-Ocean Systems (OS) and its partners is to work toward bridging the gap between “school science” and “scientist science,” in the context of using ocean examples to guide science inquiry⁹. “School science” can inaccurately depict science in the following ways: that science discoveries are always certain, that it results from single discoveries, that it is an individualistic process, that its social context is irrelevant, and that it is straightforward in its application⁸. Popular media can be a valuable source of science information, keeping current science research (or “scientist science”), and its outcomes and implications in front of students. It can help reinforce that science is always a work in progress, moving forward in increments, the result of teamwork, and that application of the results can be complicated and ingenious.

Oceans in the News is an editorial service populated with current ocean research and news articles. The service is intended to provide a clearinghouse of ocean-related articles for teachers and students from reliable sources. Selection of articles is presently based on the following criteria: relevance to the "Ocean Literacy" and COSEE-OS concept map theme of "The ocean is a major influence on weather and climate¹⁰," appropriate and reliable sources of items, diversity of knowledge / reading level, and appealing to both teachers and students.

Did you know?

The idea of using newspapers in the classroom is not a new suggestion and has a long-standing tradition in Maine. The June 8, 1795 edition of the Portland (Maine) Eastern Herald published an editorial that acknowledged the role newspapers can play in delivering, extending and enriching the curriculum. - *Newspaper Association of America*¹²

As the project evolves, *Oceans in the News* will be integrated directly into COSEE-OS concept maps, tools that are used to represent and organize knowledge. The maps illustrate relationships between ideas with lines that contain a linking phrase, specifying the relationship between concepts¹¹. These maps have been shown to help learners better grasp core ideas and promote recognition of connections between concepts. Contextualizing the *Oceans in the News* resources within COSEE-OS concept maps will provide teachers and students with the opportunity to better see ties between news reports and ocean science topics.

The making of a lifelong learner

We are in the midst of an enduring and accelerating increase in scientific knowledge. These advances will challenge us to think and live differently now and in the future. Therefore, there is good reason to encourage our students to read science news and to do so with a critical eye. It is part of the COSEE mission to make scientifically literate citizens out of our students and integrating current event resources

into our activities is both practical and imperative. This is just one way we can contribute to molding lifelong learners of science, empowering students with the tools needed to take charge of their future in constructive and creative ways.

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