Literacy elements in Amplify Science

Grades 6–8

Amplify Science engages students in reading, writing, and talking about real-world problems and compelling phenomena.

The Amplify Science core instructional approach is based on the multimodal Do, Talk, Read, Write approach, backed by three gold-standard studies.[1]

Throughout each unit, students engage in a process we call Active Reading to make sense of complex science articles as one source of evidence that helps them figure out phenomena. Across each unit, students have multiple opportunities to write about and discuss the science concepts they are learning. Each unit culminates in a Science Seminar, which is a student-led discussion with no clear answer. Following the Science Seminar, students codify their thinking in a final written argument.

1 Cervetti, Barber, Dorph, Pearson & Goldschmidt, 2012; Duesbury, Werblow & Twyman, 2011; Wang & Herman, 2005

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Amplify Science

The two parts of Active Reading

Active Reading can be broken down into two parts: teacher modeling and student reads.

Teacher modeling

In teacher modeling, the teacher reads part of the text aloud and thinks aloud as she does so, drawing from her own skills and knowledge as both a science teacher and science practitioner that she brings to bear when interpreting the text.

1. **An excerpt of student text is read aloud by the teacher**

   In some ecosystems, the population of jellies has increased so much over a short period of time that people call it a population explosion. Ecologists, fishermen, and many other people around the world are concerned about jelly population explosions.

2. **The teacher models her thinking**

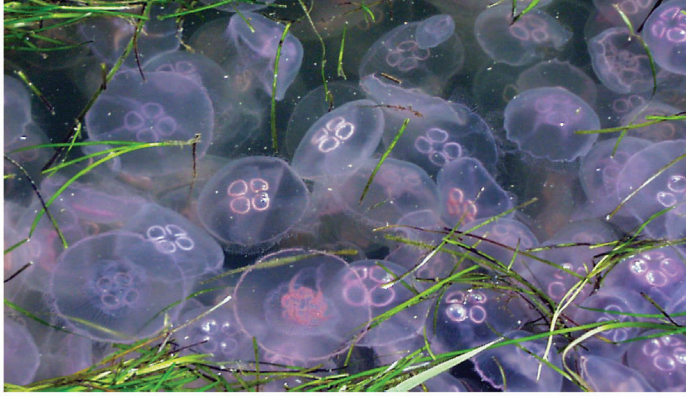
   During this step, the teacher emphasizes the importance of making deeper connections.

   It says that when populations increase a lot very quickly, this is sometimes called a population explosion. When I first think of an explosion, I think of fireworks or something exploding, and that doesn't quite make sense. Why would this be called a population explosion? I have heard the term population explosion *before, though. When something explodes, it goes from being smaller to much larger all at once. I think that is what this means.*

3. **The teacher models annotating the text**

   The teacher could choose to highlight population explosion and add a note:

   "when a population goes from smaller to larger very quickly"



Jelly population explosions can happen all over the world. This photo shows lots of jellies in a shallow p the ocean near Denmark.

Jelly Population Explosion: How Competition Can Affect Population Size

Jelly Population Explosions

In some ecosystems, the population of jellies has increased so much over a short period of time that people call it a population explosion. Ecologists, fishermen, and many other people around the world are concerned about jelly population explosions. In some places where jelly populations are getting bigger, the increase in population can affect human activities and the ecosystems we depend on: masses of jellies damage fishing nets, clog water pipes for power plants, and drive swimmers away from beaches. Scientists around the world are hard at work trying to understand why these population increases occur and how we can avoid causing them.

Moon jellies are one of the most common typ of jelly living in the ecosystems of Northern a Southern Benguela.

Jelly Population Explosion: How Competition Can Affect Population Size

Jelly Population Explosion ©2018 The Regents of the University of California. All rights reserved. Permission granted to purchaser to photocopy for classroom use. Image Credit: Malene Thyssen via CC BY-SA 2.5; Science Source.

Student reads

After articles are introduced through modeling, students read each article twice. The first reading allows students to get the gist of the article and raise their own questions and make their own connections. Students are then guided to reread the article, or part of the article, for a particular purpose, such as to examine a specific visual representation, to find evidence to support a claim, or to draw conclusions across texts.

Writing

Students write daily in the Amplify Science middle school units. Student writing exemplifies many of the different purposes for writing in science. Students annotate articles, evidence cards, and diagrams; write short answers to questions; write explanations of their own diagrams and models; and engage in longer writing activities to support a claim.

Science Seminars

Science Seminars are performance tasks that come at the end of each core unit. In the final chapter of the unit, students are introduced to a new real-world problem, collect and analyze evidence, examine a number of claims, and then engage in a full-class discussion. Students discuss which claims are best supported by the evidence available while making clear their reasoning that connects the evidence to the claims. After the seminar, students individually write a final scientific argument, drawing on the DCIs, SEPs, and CCCs they have used over the course of the unit to develop a sophisticated and convincing argument that addresses the problem they've been investigating.