Explanatory Metaphor

Osteoporosis of the Sea

A metaphor for some of the effects of ocean acidification

The story you're telling:

Ocean acidification is a change in the chemistry of the ocean and causes "osteoporosis of the sea," which prevents animals at the bottom of the food web from building and maintaining the protective shells they need to survive.

Strategically redirects thinking away from patterns such as:

• Nature Will Fix Itself • Nature Works In Cycles • Ocean Acidification—What's That?
• Ocean Is Too Big to Be Harmed • Ocean Problems = Material Pollution

Concepts and ideas included in this frame element:

- **The ocean absorbs some the excess carbon dioxide we emit into the atmosphere when we burn fossil fuels, and that changes the chemistry of the ocean. We call this "ocean acidification":** introduces the essential background of the problem through a clear, concise explanatory chain.

- **The change in chemistry is reducing the amount of carbonate in the ocean:** explains how ocean acidification changes the chemistry of the ocean.

- **Just as humans need calcium to build their bones, sea creatures need carbonate to build strong skeletons and shells:** makes the analogy between bone formation on land and shell formation in the sea.

- **As a result of the changing chemistry, we are seeing "osteoporosis of the sea," with sea creatures' skeletons and shells becoming thinner or more brittle:** establishes the topic as a problem in such a way that people can reason their way to a sensible solution.

- **For example, this species is affected in this way which in turn:** illustrates the interdependence of species by showing how direct effects on one creature lead to effects on others.

- **Osteoporosis of the sea disrupts the food web, undermining the stability of the ocean's ecosystems:** brings the issue into a wider context by clarifying its impacts at a systems level.

- **Now that we know about osteoporosis of the sea, we need to rethink our use of fossil fuels:** communicators can use this language or other preferred solutions, but it's important to close with a suggested course of action that matches the scale of the problem.