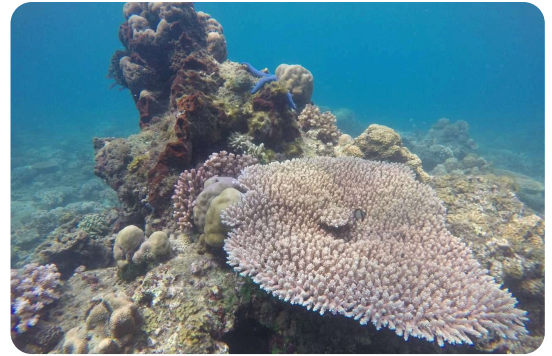




The plankton race

Lesson plan: a design challenge to build a model plankton that sinks as slowly as possible, with fair testing and improvement



Ages	8 to 11 (grades 3 to 6)
Time	60 minutes
Group	Teams of three or four
Where	Classroom, with a table that can get wet
You need	A tall clear bottle or jar of water per team (or one for the class), modelling clay, paper, straws, pipe cleaners, foil, a stopwatch or phone timer

What students learn

- Why phytoplankton need to stay near the surface.
- How plankton shapes and tricks slow sinking.
- How to run a fair test, repeat it and improve a design.
- How models compare with real living things.

Before the lesson

1. Fill tall clear containers with water. A 1.5 or 2 litre bottle with the top cut off works well.
2. Give each team the same amount of modelling clay (about the size of a grape) as a weight, plus other materials.
3. Print one **design and test sheet** per team.

The lesson

- 1** Why not sink? **10 minutes, slides 1 to 3.**
- 2** Design and test **25 minutes, slide 4.** Teams build, test three times, improve.
- 3** Race day **15 minutes, slide 5.** Each team races its best design.
- 4** Wrap up **10 minutes, slide 6.** Link winning designs to real plankton.

Answers and what to listen for

What usually wins: flat or spread-out shapes with lots of surface, such as clay flattened thin with paper arms or fringes. Compact balls sink fastest. Designs that float are disqualified, because real plankton that float to the very top get too much sun and are eaten by surface feeders, which is a nice discussion point.

Making it easier or harder

- **Younger groups:** give them two ready-made shapes to compare first.
- **Older groups:** test one change at a time, and graph sinking time against the number of arms.

Safety and good practice

- Mop up spills straight away. Supervise any cutting of bottles.

Curriculum links

- **Science:** forces, adaptation, fair testing.
- **Maths:** timing, averages.
- **Ocean Literacy Principle 5:** the ocean supports a great diversity of life and ecosystems.

The teacher reading has the science behind every slide, with links to the sources.

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