National Science Week 2020

August 15-23 2020

National Science Week is Australia's annual celebration of science and technology. This year the school theme is *'Deep Blue: innovation for the future of our oceans'*. Students at Clapham Primary School will explore this theme in Science lessons during Science Week. They will discover and investigate topics and issues linked to marine science, marine research, marine based industries, marine technologies and marine innovations.

Students can also celebrate Science Week 2020 by choosing to complete a project at home for Clapham's Science Fair. Projects can be brought to school on the first school day of Science Week (Monday August 17). Students who participate in Clapham's Science Fair will be given opportunities to present their projects to their peers and to display their projects in their classrooms. Classroom teachers will invite some students to display their projects in the STEM Lab for the whole school to observe and admire.

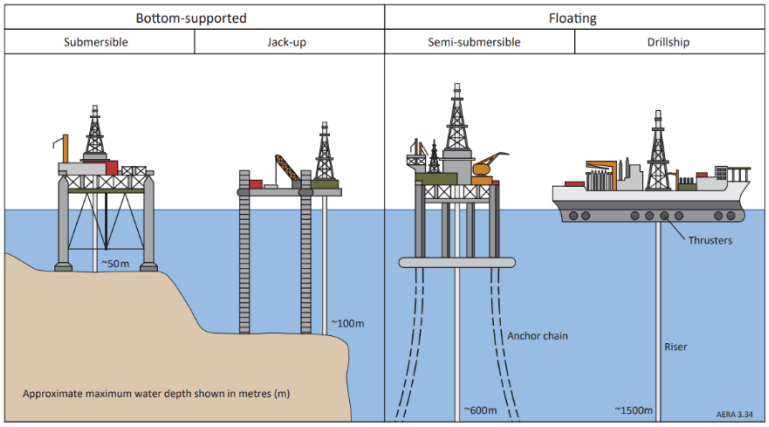
Clapham Primary Science Fair Projects

Junior Years (R-2) – Design and create an ocean habitat

What might fish, octopus, turtles, clams, crabs, jellyfish, seals, dolphins, sharks and other ocean creatures need to be safe and healthy? Ocean creatures need to have shelter, food to eat, and clean seawater in which to live. Your task is to imagine what their sustainable habitat might look like. You can write and draw, record and video, or design and make a model of the sustainable ocean habitat, accompanied by a text about what your chosen ocean creature might need, now and in the future, to grow and survive in the ocean. Remember, some ocean creatures like to swim in the ocean, others live in rock pools, and some live in seagrass meadows, while others live in reefs in the ocean. Think about whether a sustainable habitat would be polluted or pollution free.

Middle Years (3-4) – Design a floating rig

About one-third of the world's total reserves of oil and gas lie offshore below the ocean. Your task is to design a model of a structure that can support an offshore exploration rig that will remain upright and can float on water. The rig is used to determine what petroleum products, such as crude oil or gas, may be below the surface of the sea floor.



Your model floating rig needs to have a maximum weight of 500 gms, and its maximum length in any direction should not exceed 40 cms. Your rig needs pontoons and anchors to ensure its position on the ocean surface. It also needs to pass a number of tests before it can put to sea.

The design tests for the floating rig include:

- Float test - When placed in water, does it float?
- Wave test – Does it survive when you simulate small waves by agitating the water?
- Large wave test – Does it survive in rough water?
- Rain test – Does it survive when rained on (use a watering can)?
- Heavy storm test – Does it survive in heavy storms (use a bucket of water)?
- Buoyancy test – Can you add water to the pontoons to simulate appropriate buoyancy?
- Wind test – Can the anchors, pontoons, and rig survive strong winds (use a battery powered fan, hairdryer, or leaf blower)?

Imagine your floating rig and draw your designed solution. List the materials you need for your design. Build, test, and modify the floating rig.

Take photos of all the processes used and record each step along the design journey.

Senior Years (5-6) – Design a fish farm

In Australia, there are commercial fishers who supply wild-caught fish for domestic consumption and export, and recreational fishers who catch fish for personal eating and recreation. There are also many aquaculture and fish farmers who farm fish for our consumption. There are a range of aquaculture production systems where some kinds of shellfish and fish are farmed in ponds, pens, tanks, cages, baskets and racks.

Your challenge is to research what fish farms look like and the technologies they use to raise, feed and grow shellfish or fish like salmon, trout and tuna. Then design a floating fish farm and make a model with pipe cleaners, plastic mesh, hessian, balloons, polystyrene, weights, bubble wrap, paper straws, sticky tape, textas, glue and thick card.

Decide which criteria will be used in your fish farm. Will your fish farm:

- Make it easy to catch the fish?
- Be seal proof?
- Have plenty of water circulation?
- Prevent fish waste entering the sea?
- Be able to cope with big waves and storms?

Imagine your fish farm and draw your designed solution. List the materials you need for your design. Build and modify the fish farm.

Take photos of all the processes used and record each step along the design journey.

Senior Years (Year 7) – Re-engineer bycatch reduction devices

Your task is to re-engineer a range of bycatch reduction devices.

Can you re-engineer and design a bycatch reduction device for lobsters to ensure baby or undersized lobsters are not caught by standard lobster pots?

How might you re-design fishing nets that are meant to target prawns but also catch other small fish?

Could you re-design some other type of bycatch reduction device? Which one? How? Why?

Research and find information about bycatch reduction devices that use fisheyes, different types of mesh, radial escape sections, square mesh panels, grids, or turtle exclusion devices which are all about trying to sort the catch as it starts to collect towards the back of a net.

Did you know that recent research has focussed on making modifications to the front of nets? How might these modifications be designed? How might they work?

Need more information? Go to www.scienceweek.net.au or ask your teacher for a fact sheet about bycatch reduction devices.