4-6 activity

Super strong suckers!

Wonder and explore:

The perfect mix of slime, tiny hairs and water gives octopus suckers their super suction power.

The Challenge:

Design an experiement that tests if slime, tiny hairs and water will really give a suction cup more power?

- How can you test the initial suction power of a suction cup?
- What sort of suction cups will you use?
- How will you create your perfect mix of slime, tiny hairs and water? How many mixes will you test?
- What role do you think each ingredient has in generating suction?

Extension:

Did you succeed? How could you apply this new knowledge?

Can your discovery solve an everday issue or be used to create a new product?

Do you know of any other products that have been created based upon the unique feature of a sea creature? (See our ocean origins information for some examples to share with your class)

Curriculum links:

SCIENCE INQUIRY SKILLS

Year 4:

CHEMICAL SCIENCES
Natural and processed materials have a range of physical properties that can influence their use (ACSSU074)

PHYSICAL SCIENCES
Forces can be exerted by one object on another through direct contact or from a distance (ACSSU076)

Year 5:

Science Understanding

BIOLOGICAL SCIENCES

Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)

Year 5 & 6

Science as a Human Endeavour

NATURE AND DEVELOPMENT OF SCIENCE

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE081)

4-6 activity

STEM skills students will develop through this activity:

- Problem solving
- Critical analysis
- Teamwork
- Communication
- Independent thinking

Classroom learning - Octopus

An octopus has no bones, 3 hearts, blue blood, a donut shaped brain and a tongue lined with teeth.

It is a master of camouflage and can change both the colour and the texture of its skin.

These secretive creatures don't just hide though - with jet propulsion as an ultimate ability, octopuses are able to burst through the water at speeds of over 40km/h.
That's 5 times faster than an Olympic swimmer!

They can lift things 20 times their weight amd manufacture their own ink.

This gooey mix is not poisonous, but when squirted into the water it helps the octopus escape by blocking the predator's view, irritating its eyes and masking the octopus' scent.

Classroom learning - Ocean Origins

Sea Creature	Special Feature and Why they have it	Material / Product inspired by this feature.
Mussels	- Mussels and barnacles are found attached to rocks, ropes, or jetty pylons, and use feather like appendages to sieve out their food from the ocean. - As they don't move around to catch their food, to get the best supply of food, and of oxygen, mussels need to be where there is lots of water movement from currents and waves. Crashing waves and currents mean great food but it also makes it hard to hold on. - To stay fixed in one place mussels' ooze a sticky slime from their foot that hardens within 1 minute into a very strong glue.	Glue - New glues that doctors can use on or even in our bodies - (The blood in our bodies is as salty as seawater. Glue that works in seawater would work in our bodies and could be used to fix tears in hearts or other parts of our body) - New stronger cements for builders - Glues that will work better in sea water for sailors, boats, and oil rigs.
Seaweed	- Land plants have a cell wall that provides strength and rigid support, and enable plants to stand up in air. - Under the ocean this kind of support isn't needed, instead seaweeds need to be able to flow backwards and forwards with the oceans waves and currents. - The flexibility of seaweed is due to gel (being jellylike)	Super thick creamy ice-cream - Seaweed gel likes pulling water into it. By putting it in your ice-cream is soaks up all the water making it thick and smooth instead of thin and runny. It also helps keep the water from forming ice when it sits in your freezer. - This seaweed gel is also used to thicken toothpaste, salad dressing, bread, beers, puddings, cheeses and dairy products.
Coral	- Corals are animals that live together in groups. - They share room within in their bodies with algae (a type of plant) that makes food for them. - To make the food algae need sunlight. This means that corals grow in shallow water where there is lots of sunlight. - Lots of sunlight means sunburn. To stop being burnt corals have made a sunscreen of their own	Sunscreen - Coral sunscreen blocks UV light – which is the part of sunshine that burns our skin. - It took 10 years to develop but you can now buy sunscreen with the special chemicals in it that we have copied from corals. - The natural element is code named 855 – Have a look on the back of your sunscreen to see if it is one of the ingredients.