



LESSON PLAN

Season 2/Episode 10

How to make Super Strong Sandcastles (Investigating 'Sand')

Let's Find Out features Captain Zoom and her crew of scientists with exciting experiments, curious kids and a trip to a faraway place. Produced with support from Science Foundation Ireland.

Class Level:	Third/Fourth Class
Strand:	Energy and Forces
Strand Unit:	Forces
Content Objective:	<ul style="list-style-type: none">• Explore the effects of friction through experimenting with toys and objects on various surfaces

Assessment Method(s):	<ul style="list-style-type: none">• Teacher observation• Teacher designed tasks and tests• Work samples• Self-assessment	<ul style="list-style-type: none">• Conferencing• Portfolio assessment• Concept mapping• Questioning
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Lesson: How to make Super Strong Sandcastles

Lesson Introduction

- The teacher will begin the lesson using WALT and WILF.
- Question the children on their prior knowledge of forces.
- Click [HERE](https://www.youtube.com/watch?v=dWhhUSDzI-k&list=PLer4jkNChuybHYhU-YSs5LW-TuLKz_SQk&index=12) for a whole class demonstration on the experiment.
(https://www.youtube.com/watch?v=dWhhUSDzI-k&list=PLer4jkNChuybHYhU-YSs5LW-TuLKz_SQk&index=12)

Lesson Development

- First you will need to cut out four pieces of mesh. Place your sandcastle bucket onto the mesh (open side down) and draw around it.
- An adult should help with cutting out the circle.
- Now repeat these three more times, if the bucket gets narrower towards the base then draw around the base as the second circle and cut it out. Then cut out two more circles, one a little larger than the base circle of mesh and the other slightly larger again.
- Now it's time to make the sandcastles. Bring everything outside and fill your bucket with sand, pack it down well, then turn it over on a flat surface and remove the bucket. You should have a nice sandcastle made.
- Test how strong the sandcastle is by carefully adding the heavy objects (like small bricks) one at a time to the top of the sandcastle. An adult should help as the sandcastle may topple when the load gets too heavy.
- Record how many bricks the sandcastle was able to hold before it toppled.
- Now make another sandcastle, except this time, add a little sand to the bucket, pat it down well, add the first piece of mesh (the smallest one if your bucket is tapered), add some more sand, pat it down and add the next piece of mesh. Keep going until all four pieces of mesh have been added into the sandcastle and the bucket is full.
- Turn over the bucket on a flat surface, as you did before and remove the bucket. You should have another nice sandcastle.
- Carefully add the bricks to the top of the sandcastle, one at a time.
- Record how many bricks this sandcastle can hold before it topples.

Lesson Conclusion

- Talk and Discussion
- Discuss children's observations

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Lesson: How to make Super Strong Sandcastles

Resources	Methodologies	Linkage/Integration
A sandcastle bucket (a round one if possible) Sand A spade A pen A scissors Cooking mesh (available in kitchenware shops) Something heavy, like small bricks or blocks	Talk and Discussion Active Learning Skills through Content Use of the Local Environment Problem Solving	Add in at teacher's discretion

Inclusion and Diversity/Differentiation (Differentiate at teacher's discretion)

Content:

Activities:

Resources:

Product:

Environment:

Teaching Strategies:

Scientific Explanation:

Did you find that the sandcastle with the mesh could hold a lot more bricks than the regular sandcastle? That's because you used something called friction to make this sandcastle super strong. The pieces of mesh made more friction between the grains of sand, allowing them to hold together more tightly, making the sandcastle stronger.

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