

DINOSAUR DISCOVERY

Making Marks

Young Scientist Booklet

**“Play is the highest form
of research.”**

Albert Einstein

S

Question like
a Scientist

T

Design like a
Technologist

E

Build like an
Engineer

A

Create like
an Artist

M

Deduce like
a Mathematician

Experiment #1 – Traces in the Mud

Dinosaur Discovery: Making Marks

2



Experiment Tool Kit

Per Student:

- > Young Scientist Booklets
- > 2 small plastic boxes with lids
- > 1/2 cup of salt
- > 1 cup of flour
- > Bowl
- > 2 cups water
- > Shells and leaves
- > Plaster of Paris
- > Measuring cups
- > Paper towels
- > Safety glasses
- > Dust masks
- > 1/2 tablespoon Vegetable Oil
- > Plastic dinosaurs
- > Hot glue guns
- > Hot glue sticks



Warm Up Exercise

Go outside, find a sandbox (or some mud) and be a dinosaur! Running, walking, stalking, creeping.

If there is paint around, step into the paint and then put tracks onto a large piece of paper or cloth!

1

Building the plaster cast. 1/2

1. In the bowl, mix a cup of flour with half a cup of salt. Add half a cup of water and half a tablespoon of vegetable oil. Mix with your fingers until it forms a dough.
2. Use your hands to press and stretch the dough for three minutes until it becomes smooth. If the dough is sticky, add a little more flour.
3. Press the dough into a small plastic box. Push it into the corners, and pat it down so that it makes a flat, smooth surface.
4. Pick a few shells and leaves you like the look of, and push them into the dough. Take them out carefully and look at the shape they leave behind. This impression is a mould. Do the same with the plastic dinosaurs.
5. To make a cast, we will mix up plaster of Paris. Take care with this next part. Plaster dust can damage lungs, so try not to spread dust around or breathe in any dust. Put on your safety glasses and dust mask now.
6. Measure 70 mL of water and pour it into a second plastic box (the empty one).
7. Dry the measuring jug with the paper towel, and put the wet paper towel to one side to clean up any messes.
8. Measure 100 mL of plaster of Paris.
9. Pour the plaster of Paris into the water, and use a spoon to stir it. Try to get rid of any lumps by stirring. You can only stir for one minute before it will start to get hard. If any splashes out, clean it up with the wet paper towel.
10. Pour the liquid plaster of Paris over the dough with the moulds. Watch how it fills the moulds and forms a flat surface on top.
11. Tap the sides of the plastic box to release air bubbles.

2

Building the plaster cast. 2/2

12. Put it to one side for fifteen minutes.
13. Put a lid on the mould with the plaster of Paris, so you can take it home to dry.
14. After six hours, you can remove the cast. Turn the box upside down and pull out the plaster and dough. Remove the dough from the plaster. The plaster is a cast of the mould you made.
15. To clean up, wait for the plaster to dry and scrape it into the bin. Do not pour down the sink, as it can clog drains.

Scientific Method

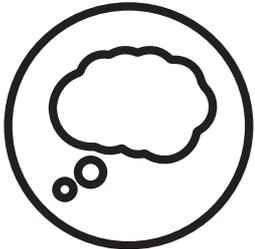
Dinosaur Discovery: Making Marks

3

Young Scientist Name _____



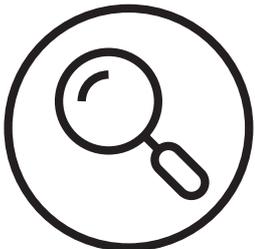
Ask a Question!



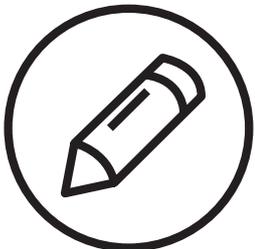
Make a Prediction.



Make a Plan and Follow it.



Observe. Next, Draw what you Observed.



Record the Results.



Draw a conclusion.

Experiment #2 - Tracks in the Sand

Dinosaur Discovery: Making Marks

4

1 Form the Dinosaur footprint. 1/2

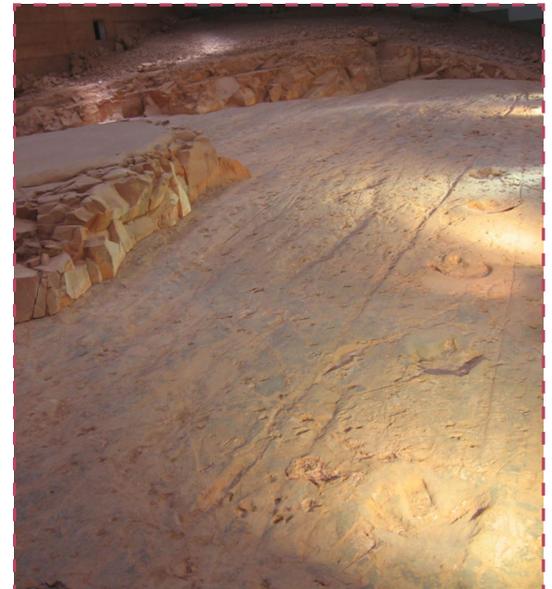
1. Make observations about the feel of sand and flour.
2. Make 2cm sand box (label: sand)/make 2cm flour box (label: flour)/make 2cm sand/four box (label: sandy flour)
3. **Ask children to make a prediction about which material will preserve footprints the best when it's wet. Will it be the sand, the flour, or the sandy flour?**
4. Make aquadhere (2 cups water and 1/4 cup aquadhere) and pour into each plastic box, mix well with the contents. Flatten the surface of each box.
5. Make dinosaur footprints in each box
6. **Ask children to observe the footprints in each box, what do they notice?**
7. Sprinkle each box with a layer of brown sugar. Allow the sugar to cover the footprints. Imagine that the footprints were made in wet soil, and a layer of dirt covered them up
8. **Leave the boxes to rest for twenty minutes. (choose something to do at this point)**



Experiment Tool Kit

Per Student:

- > Small plastic boxes
- > Sand
- > Flour
- > Bowl
- > 1 Litre of water
- > Aquadhere glue
- > Brown sugar
- > Plastic dinosaurs
- > Measuring cup



2 Form the Dinosaur footprint. 2/2

9. **Make a prediction, will it be the sand, the flour, or the sandy flour that preserves the footprints best?**
10. Wash the brown sugar away and see which material preserved the footprints best. Pour half a cup of water over the sugar in the sand box. Observe what happens. Repeat for the flour box, and the sandy flour box.
11. What do you observe? Which material preserved the footprints best? Take a pinch of sand and observe it. How does it feel? How big are the particles? Take a pinch of flour and observe it, then compare it with sand. What is different?



Scientific Method

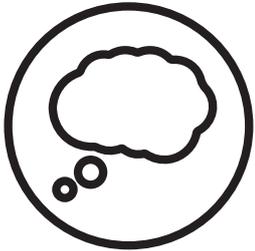
Dinosaur Discovery: Making Marks

5

Young Scientist Name _____



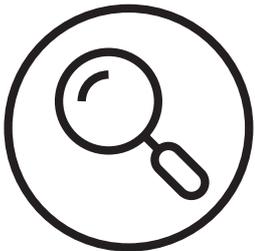
Ask a Question!



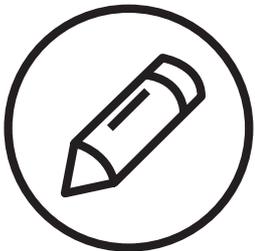
Make a Prediction.



Make a Plan and Follow it.



Observe. Next, Draw what you Observed.



Record the Results.



Draw a conclusion.

Resources & Challenges

Dinosaur Discovery: Making Marks

6

Please click on the image, the underlined hyperlink OR scan the QR code to access the online video.

Resources and Video Links

Introductory Video 1 of 2

Video from the ABC introduces the dinosaur stampede at Lark Quarry.

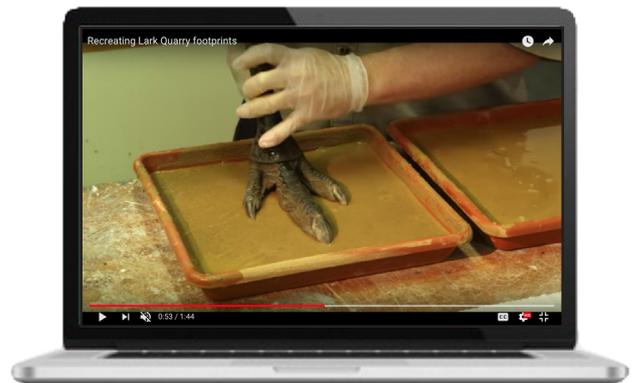
<https://www.youtube.com/watch?v=jRWFxr60kUK>



Introductory Video 2 of 2

Video from Queensland Museum shows a palaeontologist recreating dinosaur footprints using mixtures of mud. A good time to show this would be after the first half of the activity.

<https://www.youtube.com/watch?v=whGwvnlmTI&t=25s>



How to do Experiment 1 of 2

Traces in the Mud



How to do Experiment 2 of 2

Tracks in the Sand





RioTinto



**Queensland
Government**

