

# DINOSAUR DISCOVERY

## Form a Fossil

**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 – Spongy Bone

## Dinosaur Discovery: Form a Fossil

# 1



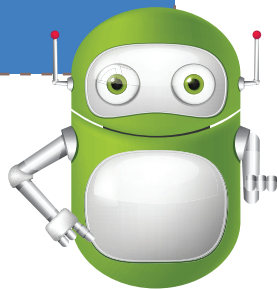
### Experiment Tool Kit

#### Per Student:

- > Young Scientist Booklets
- > 2 Kitchen Sponges
- > 1 Bone Template
- > 1 Dish filled with sand
- > Plastic Gloves and Safety Glasses
- > 1 Measuring jug
- > 250ml Hot water
- > 500ml Cold water
- > 1 Whiteboard marker
- > 3 Pipettes
- > 3 Empty cups

#### Per Group:

- > Kettle, for boiling water
- > Scissors



## 1 Prepare the Bones. 1/2

1. Put on your safety glasses and gloves.
2. Cut out the dinosaur bone template and the labels
3. Use a whiteboard marker to trace out two dinosaur bones side by side onto the sponge. You should now have four spongy bones.
4. Put one spongy bone aside. Place the other three spongy bones into a dish filled with sand.
5. Make the following three different mixtures in three cups.
  - a. Cold water only.
  - b. Cold water mixed with washing soda
  - c. Hot water mixed with washing soda
6. Measure half a cup of cold water and put it in a cup. Label it as "cold water only".
7. Measure half a cup of cold water, add a teaspoon of washing soda and stir it until it dissolves. Count how many teaspoons of washing soda you can add to the cold water until no more will dissolve. You'll see a small amount of washing soda at the bottom of the cup. Label "cold water and washing soda".

## 2 Prepare the Bones. 2/2

1. Measure half a cup of hot water, add a teaspoon of washing soda and stir it until it dissolves. Count how many teaspoons of washing soda you can add to the cold water until no more will dissolve. You'll see a small amount of washing soda at the bottom of the cup. Label "hot water and washing soda".
2. Get your tray with the spongy bones, and label one spongy bone "cold water only".
3. Use a pipette to drip 15 drops of water from the "cold water only" cup onto the spongy bone.
4. Repeat using the second spongy bone. Use the label "cold water mixed with washing soda" and 15 drops from the "cold water mixed with washing soda" cup.
5. Repeat using the third spongy bone. Use the label "hot water mixed with washing soda" and 15 drops from the "hot water mixed with washing soda" cup.
6. Gently fan the spongy bones with your hand for 30 seconds.
7. Use your finger to gently poke each of the spongy bones. How do they feel? Are some slightly harder than the others?
8. Put the spongy bones aside, and check on them again at the end of the session, and next week. Compare to the untreated spongy bone. Have they changed? Which ones are the hardest?



# Method & Results

## Dinosaur Discovery: Form a Fossil

# 2

Young Scientist Name \_\_\_\_\_



**Ask a Question!**

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**Make a Prediction.**

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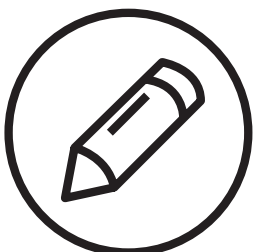
**Make a Plan and Follow it.**

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**Observe. Next, Draw what you Observed.**



**Record the Results.**

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**Draw a conclusion.**

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# Experiment #2 – Sudden Solid

## Dinosaur Discovery: Form a Fossil

# 3

### 1 Making the Solid. 1/2

Wear gloves and safety goggles for this experiment.

1. Fill the cup with 250 mL cold water.
2. Use the teaspoon to stir Epsom salts into the water until no more Epsom salts will dissolve.
3. Take the cup containing washing soda mixed with water from the last experiment (either hot water or cold water). Use a pipette to pick up some of the washing soda solution, and put one drop into the cup containing the Epsom salt solution.
4. Observe what happens.
5. Try another drop. Continue.

### 2 Making the Solid. 2/2

Next, we're going to separate the white solid from the liquid.

1. Take the sheet of paper towel and spread it over the other empty cup. Push the middle of the paper towel down a bit, so it makes a little funnel.
2. Slowly pour the mixture with the white solid through the paper towel. The water should go into the cup, and the solid should catch on the paper towel.
3. Take out the paper towel and spread some of the solid onto the plate.
4. Use the pipette to drip vinegar over the solid on the plate. Observe closely for 30 seconds. Can you see any bubbles form?



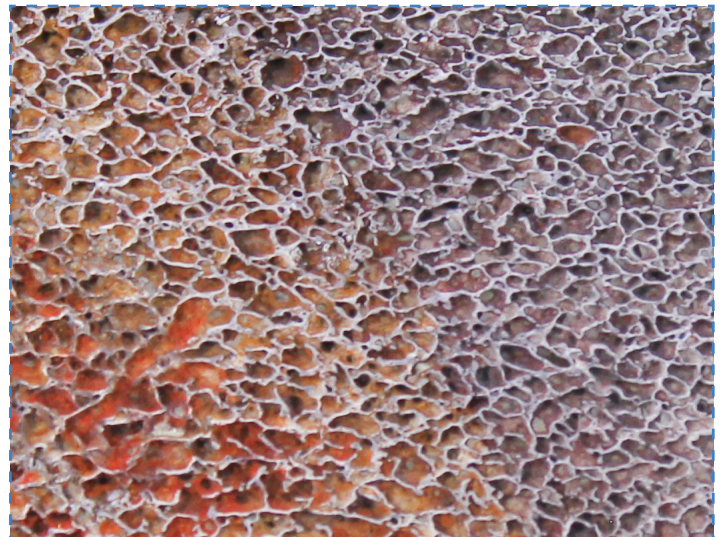
### Experiment Tool Kit

#### Per Student:

- > Young Scientist Booklets
- > 2 Empty cups
- > 250ml Cold water
- > Epsom salts
- > 1 Measuring jug
- > 1 Pipette
- > 1 Teaspoon
- > Plate
- > 1 cup Washing Soda (+ water from last experiment)

#### Per Group:

- > Paper towel
- > Vinegar



# Method & Results

## Dinosaur Discovery: Form a Fossil

# 4

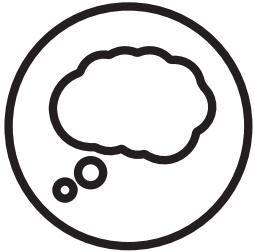
Young Scientist Name \_\_\_\_\_



**Ask a Question!**

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**Make a Prediction.**

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**Make a Plan and Follow it.**

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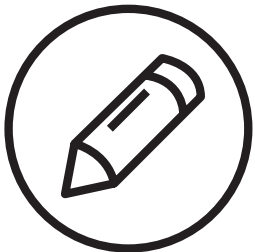


**Observe. Next, Draw what you Observed.**

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**Record the Results.**

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**Draw a conclusion.**

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# Resources & Challenges

## Dinosaur Discovery: Form a Fossil

# 5

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

### Resources and Video Links

#### Introductory Video

Latest discovery in Winton. Half a sauropod!

<http://www.abc.net.au/news/2017-06-27/aussie-farmers-find-near-complete-dinosaur-skeleton/8655666>



#### Extra Video

Spongy Bone.

[https://www.youtube.com/watch?v=BBSRo-\\_xxZo](https://www.youtube.com/watch?v=BBSRo-_xxZo)



#### Explanatory Video

Permineralisation and replacement explained.

<https://www.youtube.com/watch?v=9f5HehQovx8>



#### Helpful Experiment Video

How to do experiment.

<https://www.youtube.com/watch?v=c-YHebZDd4Y>





# Bone Template & Labels

Dinosaur Discovery: Form a Fossil

# 6

A) Cut the bone out and use as a template for the sponges.

B) Cut out the boxes below to use as labels.



