

## **Scene 1: Who Let the Bones Out?**

Dr. Shaw Tee sat back in the dirt, his eyes wide with disbelief, and yelled, “Dr. Krunk, come over here and see this, you’re not going to believe what I’ve found!”

Dr. So Krunk got up from her field desk and walked across the site towards where Dr. Tee had been carefully brushing away dirt for the last two hours. She and Dr. Tee were paleontologists from the University of Madagascar, and had been excavating this site in the northwest near Mahajanga for more than a month.

They were both hoping to find some dinosaurs, since there had been some interesting finds in the area before. She had to walk carefully as she crossed the site, because they had built a grid system out of string throughout the site in order to map the areas that they were excavating. Finally, she got over to where Dr. Tee sat. She crouched down and looked at where Dr. Tee had been brushing away the dirt.

Her eyes widened in surprise and she gasped, saying “Dr. Tee, what is it?”

Dr. Tee nodded and said, “I’m not sure what this is. We have no record of this dinosaur fossil. But there’s more. Do you see what’s right over there?” He pointed to an object that was in an excavation square roughly twenty feet away. Dr. Krunk walked over to the object and stopped in her tracks.

She looked back at Dr. Tee and said, “This is a *Homo sapiens*! It would have to be from the Late Pleistocene or Early Recent period, judging by the stone tools that are lying next to it. These are two major finds! I’m going to go email the university and tell everyone!”

### Scene 1

**Instructions:** Please fill this out and turn in *one per group*. Some suggested Facts and Learning Issues are included but feel free to add your own. If additional room is needed, use the back of this sheet.

Facts	Hypotheses
<ul style="list-style-type: none"><li>• Drs. Krunk and Tee are paleontologists</li><li>• They are excavating for dinosaurs</li></ul>	
Learning Issues	Questions
<ul style="list-style-type: none"><li>• What is paleontology?</li><li>• What is Homo sapiens?</li><li>• How do paleontologists excavate a site?</li><li>• Where is Mahajanga?</li></ul>	<ul style="list-style-type: none"><li>• Why is Dr. Krunk surprised?</li></ul>

## **Scene 2: Who Let the Bones Out?**

A reporter called out, “Dr. Krunk, is it true that you and Dr. Tee have discovered a human body near a dinosaur fossil in Madagascar?”

Another reporter yelled, “Does this mean that humans and dinosaurs coexisted?”

Yet another reporter asked, “Does this refute all of the earlier theories about when dinosaurs and humans lived on the earth?”

Dr. Tee and Dr. Krunk looked at each other and sighed. Ever since the University of Madagascar had announced their finds, the two paleontologists had become like celebrities. Reporters were everywhere, asking them all sorts of questions, while the newspapers and magazines were full of stories about the dinosaur and human found so close together.

Dr. Krunk spoke up so that everyone could hear her, and said, “An employee for the Oprah show called a few days ago and asked us to be guests on the show. Dr. Tee and I will be presenting our findings on the show in a few days. There, we will answer all of your questions and more. Until then, we will be analyzing the data that we gathered, including radiocarbon dates, potassium argon dates, stratigraphic maps and our maps of the site so we can be prepared for our Oprah appearance. Thank you.”

Dr. Tee leaned over and whispered in her ear, “We’ve got a lot of work to do. We should get back to the paleontology lab right away!”

## A Spectacular Find: Scene 2 Handout

Department of Paleontology, University of Madagascar  
RADIOISOTOPE DATING RESULTS

LOCATION: Madagascar

RESEARCHERS: Shaw Tee, So Krunk

DATE ANALYZED: October 5, 2006

SPECIMEN ANALYZED: Bone fragments from *Homo sapiens*

COMMON NAME: Modern human

DATING TECHNIQUE USED: Radiocarbon ( $^{14}\text{C}$ )

RESULTS: Specimen dated to  $29,000 \pm 375$  years ago

SPECIMEN ANALYZED: Fossil fragments

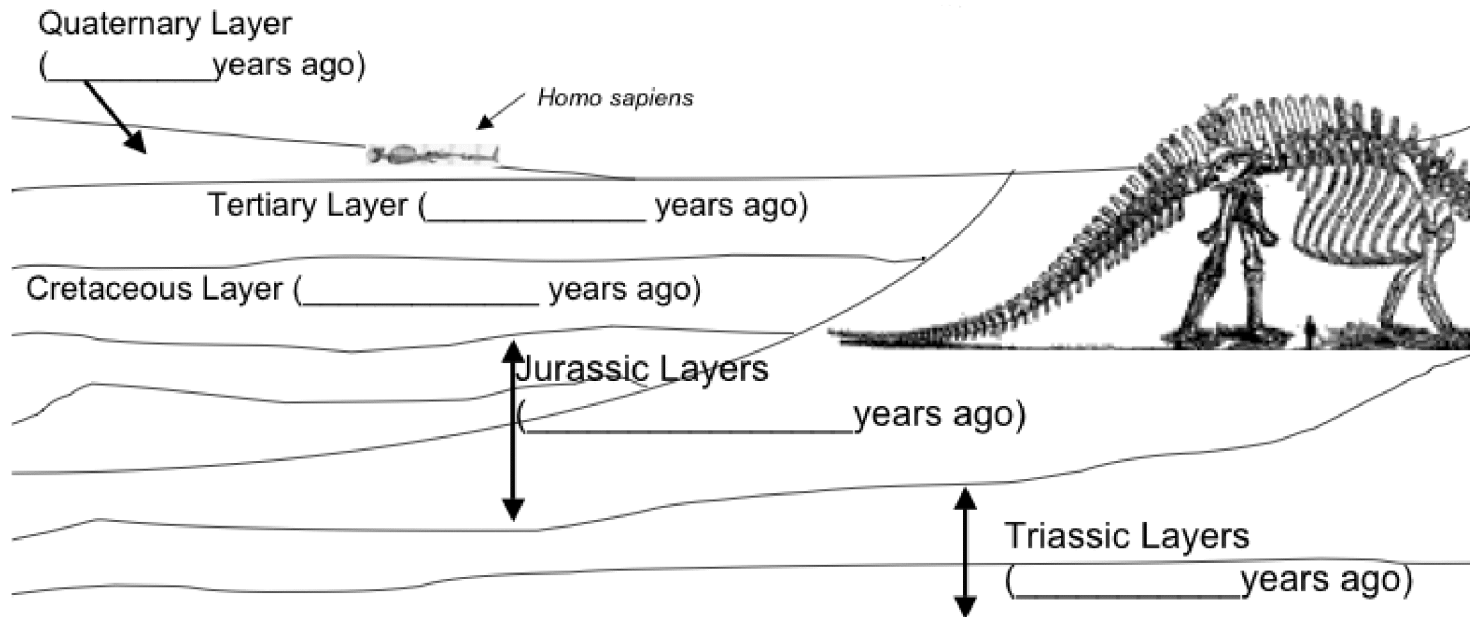
COMMON NAME: *Unknown* dinosaur fossil

DATING TECHNIQUE USED: Potassium-Argon ( $^{40}\text{K}/^{40}\text{Ar}$ )

RESULTS: Specimen dated to  $188$  million  $\pm$   $400,000$  years ago

A Spectacular Find: Scene 2 Handout

Stratigraphic Map  
The Madagascar Site



### Scene 2

**Instructions:** Please fill this out and turn in *one per group*. Some suggested Facts and Learning Issues are included but feel free to add your own. If additional room is needed, use the back of this sheet.

Facts	Hypotheses
Learning Issues	Questions
<ul style="list-style-type: none"><li>• What are radiocarbon dates?</li><li>• What are potassium argon dates?</li><li>• What are stratigraphic maps?</li></ul>	



## Paleontology Dig: How scientists uncover fossils

### **Jobs**

Recorder/Supervisor  
Artist/photographer

Sifter  
Digger/Brusher

### **Tools**

Buckets  
Small Brushes  
String  
Tweezers  
Small plastic bags

Shovel/Spoon  
Small Screens  
Tape Measure  
Pencil and Paper  
Rake/Fork

### **Some tips and procedures to help you find fossils:**

- ❖ Excavation destroys the landscape so when conducting a “dig” you must be VERY CAREFUL about how you choose the site and the methods you use to dig.
- ❖ Create a grid across the site using string. When excavating each square, pictures and drawings should be used to document what is found. Using a grid system creates a map of the site.
- ❖ Digging can damage artifacts. Instead, use the brushes to gently move away the dirt. Shovels can be used to move dirt from the site to the sifter (see next tip).
- ❖ Some artifacts are too small to be found easily in the dirt. The dirt should be passed through a screen to make sure small objects are not missed and discarded. Using the Shovel, dirt can be moved from the site to a bucket. Next, you can use the screen to sift through the dirt by shaking the screen back and forth.
- ❖ It is common to take samples of the dirt to analyze later for age and soil composition.
- ❖ Record keeping is important. Notes should be taken the entire time a site is excavated and pictures or drawings of each finding should be made. Each artifact found should be labeled and numbered.

Self-Evaluation Worksheet

Date: \_\_\_\_\_

Your Name: \_\_\_\_\_ Group #: \_\_\_\_\_

**Instructions:** Please circle the response with which you agree the most. This evaluation will only be read by your teacher and will not be shown to other students.

1. How would you rate *your* participation in group discussion and group work?

**5 Excellent      4 Very Good      3 Good      2 Fair      1 Poor**

2. How would you rate *your* effort in completing the case?

**5 Excellent      4 Very Good      3 Good      2 Fair      1 Poor**

3. Did *you* complete the assigned homework?    **Yes**      **No**

If No, explain why:

4. How well did *you* work with everyone in your group?

**5 Excellent      4 Very Good      3 Good      2 Fair      1 Poor**

5. Overall, how would you rate *your* performance in this case?

**5 Excellent      4 Very Good      3 Good      2 Fair      1 Poor**

6. What praise or criticism do you have for other group members? What are your thoughts about the case?

---

---

---

---

---

---

---



Group Members: \_\_\_\_\_

<b>CATEGORY</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Boxchart: Scene 1</b>	All sections filled out completely.	3 sections filled out	2 sections filled out	1 section filled out
<b>Boxchart: Scene 2</b>	All sections filled out completely.	3 sections filled out	2 sections filled out	1 section filled out
<b>Lab on Archeology</b>	All group members participated, made observations, and used the correct techniques for excavation.	Only some group members participated but used the correct techniques.	The group was using incorrect excavation techniques.	Excavation was not completed.
<b>Presentation for Oprah Show</b>	All group members participated. Presentation was well prepared, creative, included a visual aid (with fossil), and supportive evidence.	Only some group members participated. Presentation was well prepared and included a visual aid but not adequate evidence.	Presentation did not include a visual aid and was not complete.	Presentation was not given.
<b>Individual Participation</b>	Homework completed, made contributions to group work, worked well with other group members.	Completed some homework and made contributions to group but was not always on task.	Completed minimal homework and made minimal contributions to the group.	Did not complete homework or contribute to the group.