TimePod ADVENTURES

IMMERSIVE LEARNING
EDUCATION

Plesiosaur Encounter

Educator Guide

In TimePod Adventures: Plesiosaur Encounter, students travel to the oceans of prehistoric Earth to witness a living plesiosaur in its natural environment.

Hello, I'm ADA, your Autonomous Digital Assistant

ADA, the TimePod's artificial intelligence system, will guide student adventurers as they launch the TimePod and complete their mission.

Learning Objectives

✓ Analyze prehistoric creatures through their fossils and understand that fossils are scientific evidence of real creatures
✓ Through immersion, gain a deep understanding of how prehistoric creatures lived
✓ Understand that museums play an important role in natural science

NGSS Standards

3-LS4-1   MS-LS4-1

Technical requirements for TimePod Adventures: Plesiosaur Encounter

- Computer with an internet connection
- Keyboard and mouse or trackpad
- Web browser
- Headphones or speaker
- Not compatible with phones or tablets

Contents

Click the tabs below to jump to sections of this guide. Press the Launch button to start Plesiosaur Encounter.

Launch

Step-by-Step Walkthrough   Reflection Questions   Activities   Extend the Learning   Printouts

Preparing for Plesiosaur Encounter

Ask your students if they have heard of a plesiosaur. Do they know anything about it? Explain that a plesiosaur is a type of marine reptile that lived at the same time as dinosaurs. Plesiosaurs are not classified as dinosaurs because they lived their lives in the ocean, while dinosaurs were land-dwelling.

The scientific name plesiosaurus means "nearly lizard." They were given this name because they were more similar to lizards than other types of marine reptiles, like ichthyosaurs.

Tell your students that they are going to go on an adventure in the TimePod. They will travel back to the oceans of the Cretaceous Period to observe a plesiosaur in its natural environment. Once students open Plesiosaur Encounter, they will see a Start button after a brief loading period.

Step-by-Step Walkthrough of Plesiosaur Encounter
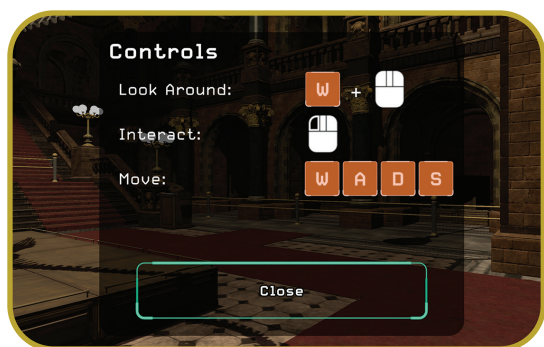
1 When students press Start, they will land the TimePod in a natural history museum with many fossils of prehistoric creatures. Students can move around using their keyboard and trackpad/mouse.
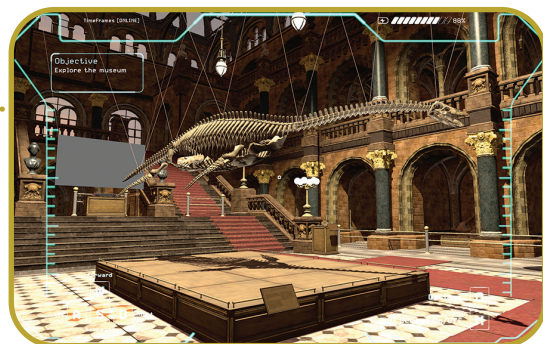
2 ADA will guide students to observe the large plesiosaur skeleton that hangs in the middle of the room. The skull is missing a tooth! Students will use the TimePod to travel back in time to find a replacement plesiosaur tooth.

Students enter the TimePod, where ADA explains their mission: to take a photo of the plesiosaur, record its sound, and collect a tooth. Students click the big red lever to launch. The TimePod lands in the water. The controls feel different, so ADA gives students time to try them out.

3 ADA will introduce the Lifeform Detector, which lights up to indicate the location of animals. It will guide students to discover an ammonite (swimming shelled cephalopod, plesiosaur prey) and an Archelon (large, prehistoric sea turtle). These will appear in the Creature Log on the TimePod's dashboard screen.

4 Next, students will track and find the majestic plesiosaur. They can take a photo of it by pushing the P button. Students may continue taking photos until they take a shot they like. They can save up to nine photos. Students will be able to review their photos once they return to the museum.

Next, students record the plesiosaur's sound by pushing the R button. The recorder will turn off when the recording is complete. They will be able to review their audio when they return to the museum.

5 For the third part of their mission, ADA will set the Lifeform Detector to search for the tooth. Once they locate the tooth, ADA will collect it. If students are struggling to find the tooth, tell them to look for a cave opening.

6 After the tooth is collected, a fierce-looking mosasaur appears. ADA will take over to launch the TimePod and return to the museum.

Once the TimePod is back in the museum, ADA will guide students to add their favorite photo and recording to the museum exhibit. There is an option to download their photos if they'd like to save them. Students will also place the missing tooth into the plesiosaur skull.

7 At this point, students can continue to explore the museum on their own. Consider using the Secret Museum Message activity, which encourages them to read each exhibit. When ready, students can head back to the TimePod to end the experience. They will see an option to go to the Plesiosaur Fact Book, the Plesiosaur Activity Book, or to exit.

Reflection Questions

Lead students in a discussion reflecting on their TimePod experience.
Sample questions:

- What was most surprising to you during TimePod Adventures: Plesiosaur Encounter? Which parts were the most exciting?
- Do any of the extinct animals—plesiosaur, mosasaur, ammonite or Archelon—remind you of animals of today? Why? To support the discussion, share images of each creature, linked above. Talk about how animals change and evolve over time to become other animals, including those living today.
- As an adventurer, you helped the museum get missing info: a photo, a sound sample and a tooth. In real life, who do you think provides information to museums? How do they find it?

Activities

These activities complement the learning from TimePod Adventures: Plesiosaur Encounter.

Secret Museum Message

Introduce the activity by reminding students that museums are full of information. For this activity, they will visit (or revisit) the digital museum.

Instructions: Divide students into pairs. Give each pair a Secret Museum Message printout and the link to TimePod Adventures: Plesiosaur Encounter. After their TimePod returns from the ocean, invite students to check out the museum's seven exhibits to decode the secret message.

Answer Key:

Secret Museum Message

Name _____ Date _____

Instructions
Visit the museum exhibits in TimePod Adventures: Plesiosaur Encounter and use the related hints to unlock a secret message!

Secret Message

I declare it in this statement:
these museum displays are A N C I E N T !

1. M O S A S A U R
2. T Y R A N N O S A U R U S   R E X
3. A R C H E L O N
4. A M M O N I T E
5. P L E S I O S A U R
6. M A R Y   A N N I N G
7. W O O L L Y   M A M M O T H

Hints
1. Could open its jaw 2 m wide
2. A dinosaur
3. The largest turtle
4. Swirly animal related to an octopus
5. Marine reptile that breathed air and ate rocks
6. She made important fossil discoveries
7. Extinct mammal that lived alongside early humans

IMMERSIVE LEARNING   TimePod Adventures: Plesiosaur Encounter

Hints in Fossils

Introduce the activity by asking students: How do scientists know so much about animals that are extinct, like the plesiosaur? The answer is fossils. Scientists consider fossils carefully to get hints about how animals looked and behaved.

Instructions: Divide students into pairs. Give a fossil set to each pair (A, B, or C). Ask students to study and consider their fossil set and then make three hypotheses about the animal it came from. Provide evidence for each. There are many right answers! Remind students that a hypothesis is not something we know: it's an educated guess. If students need hints, have them consider:

- **Diet:** What did the animal eat? (Sharp teeth suggest meat, flat teeth suggest plants)
- **Movement:** How did the animal move? (Fins suggest it swam, two legs suggest bipedal, 4 legs suggest quadruped)
- **Size:** About how big was the animal? (Use measurement on one of the fossils to estimate)
- **Location and Habitat:** Where did the animal live? (Possibly around the location it was found.) What kind of habitat was it?

Fossil Sets
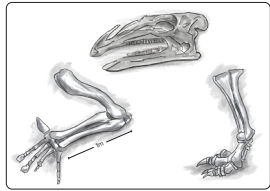
Fossil sets are loosely based on:

- **Set A: Archaeopteryx**: Crow-sized, winged meat eater. It's likely that it glided or flew short distances, and may have also used its wings for warmth.
- **Set B: Iguanodon**: Giant herbivore that may have grazed on two legs but is thought to have mostly walked on four.
- **Set C: Plesiosaur**: Sea-dweller that swam; meat eater. Found all over the world.

After the activity, ask students: Did you feel confident about your hypotheses? What would make you feel more confident? (Possible answers: further fossil evidence, other fossils of the same species to compare, deeper knowledge of animal anatomy/ movement/ diet.)
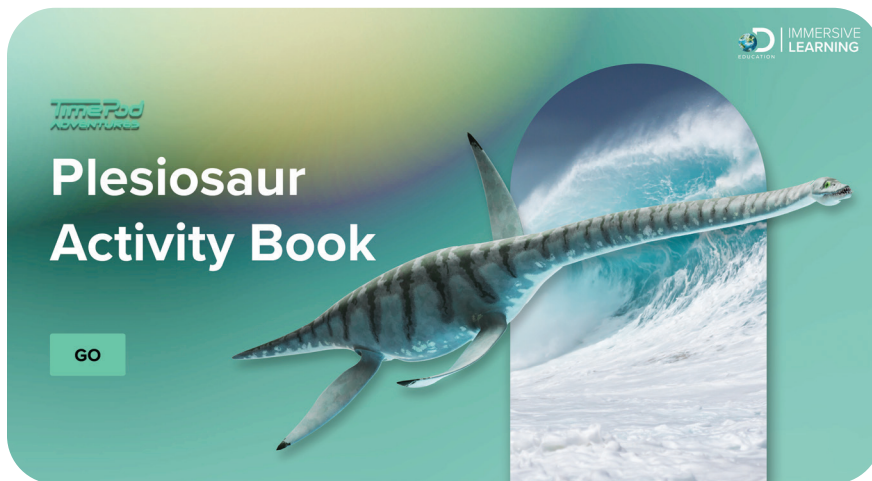
Extend the Learning

Students can explore these digital books for more information and activities related to plesiosaurs!

Plesiosaur Fact Book

Explore wild facts, important people, a prehistoric timeline and more!

Plesiosaur Activity Book

Create, think, build and decide for yourself through projects and writing about plesiosaurs.

More Immersive Experiences

- Take another trip in the TimePod with your students, this time in life-size augmented reality! Check out the free TimePod Adventures app
- Let students create their own plesiosaur stories with Sandbox AR
- Explore other immersive offerings

Secret Museum Message

Name _____   **Date** _____

Instructions

Visit the museum exhibits in TimePod Adventures: Plesiosaur Encounter and use the related hints to unlock a secret message!

Secret Message

> *I declare it in this statement:*
>
> *these museum displays are* ⬜1 ⬜2 ⬜3 ⬜4 ⬜5 ⬜6 ⬜7 *!*

1. ___ ___ ___ ⬜ ___ ___ ___ ___

2. ___ ___ ___ ___ ⬜ ___ ___ ___ ___ ___ ___ ___ ___   ___ ___ ___

3. ___ ___ ⬜ ___ ___ ___ ___ ___

4. ___ ___ ___ ___ ⬜ ___ ___ ___

5. ___ ___ ⬜ ___ ___ ___ ___

6. ___ ___ ___ ___ ⬜ ___ ___ ___ ___

7. ___ ___ ___ ___ ___ ___ ___ ___ ⬜ ___

Hints

1. Could open its jaw 2 m wide
2. A dinosaur
3. The largest turtle
4. Swirly animal related to an octopus
5. Marine reptile that breathed air and ate rocks
6. She made important fossil discoveries
7. Extinct mammal that lived alongside early humans
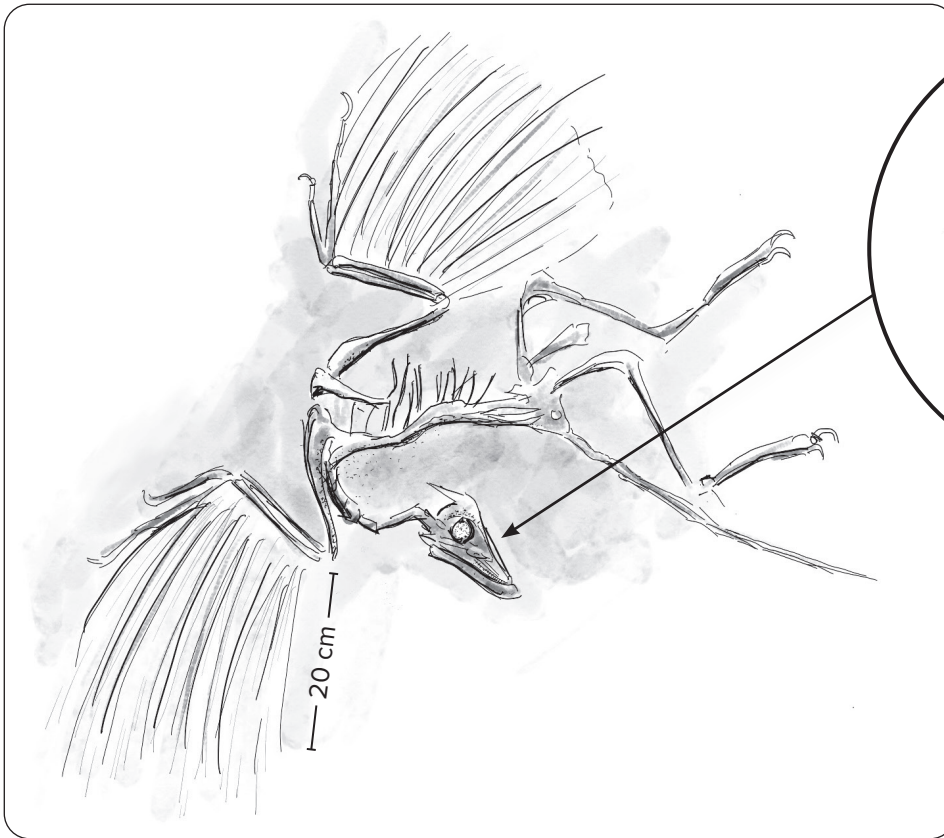
Fossil Set A

Name _____ **Date** _____

Location Found: Germany

Specimen:

Entire skeleton including 2 arms with feather impressions

20 cm

Hypotheses:

1. _____

_____

2. _____

_____

3. _____

_____

Name _____   **Date** _____

Location Found: Sudan

Specimens:

1 skull

1 arm

1 back limb

1m

Hypotheses:

1. _____

_____

2. _____

_____

3. _____
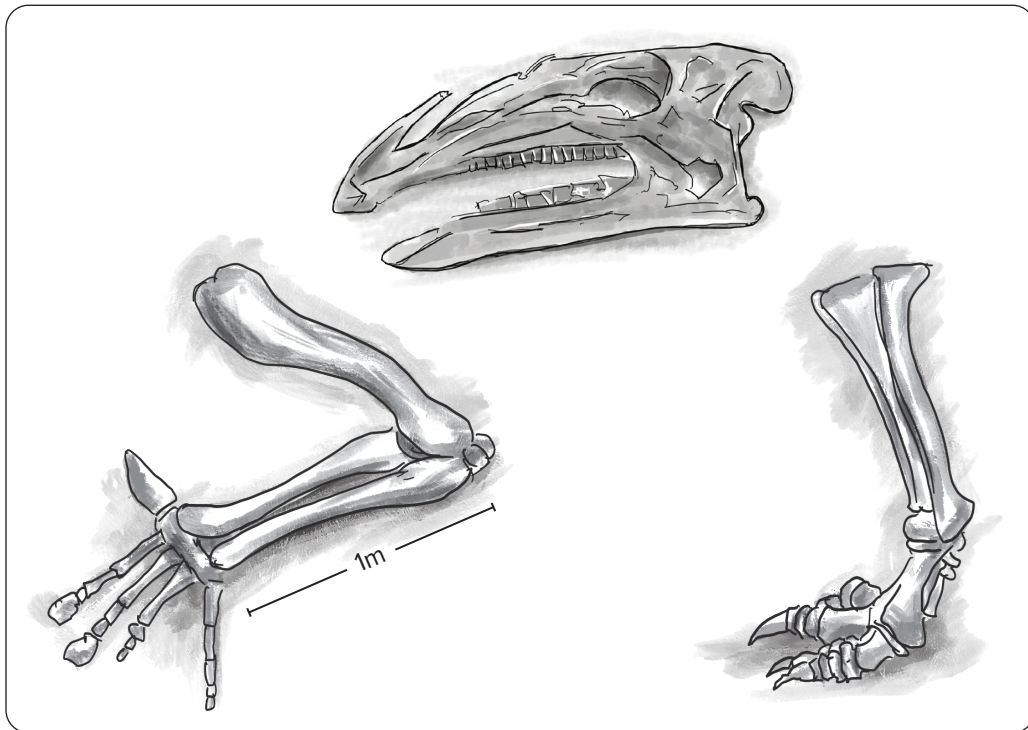
Name _____   **Date** _____

Location Found: Antarctica

Specimens:

1 skull

4 flippers

2m

Hypotheses:

1. _____

_____

2. _____

_____

3. _____

_____

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TimePod Adventures: Plesiosaur Encounter
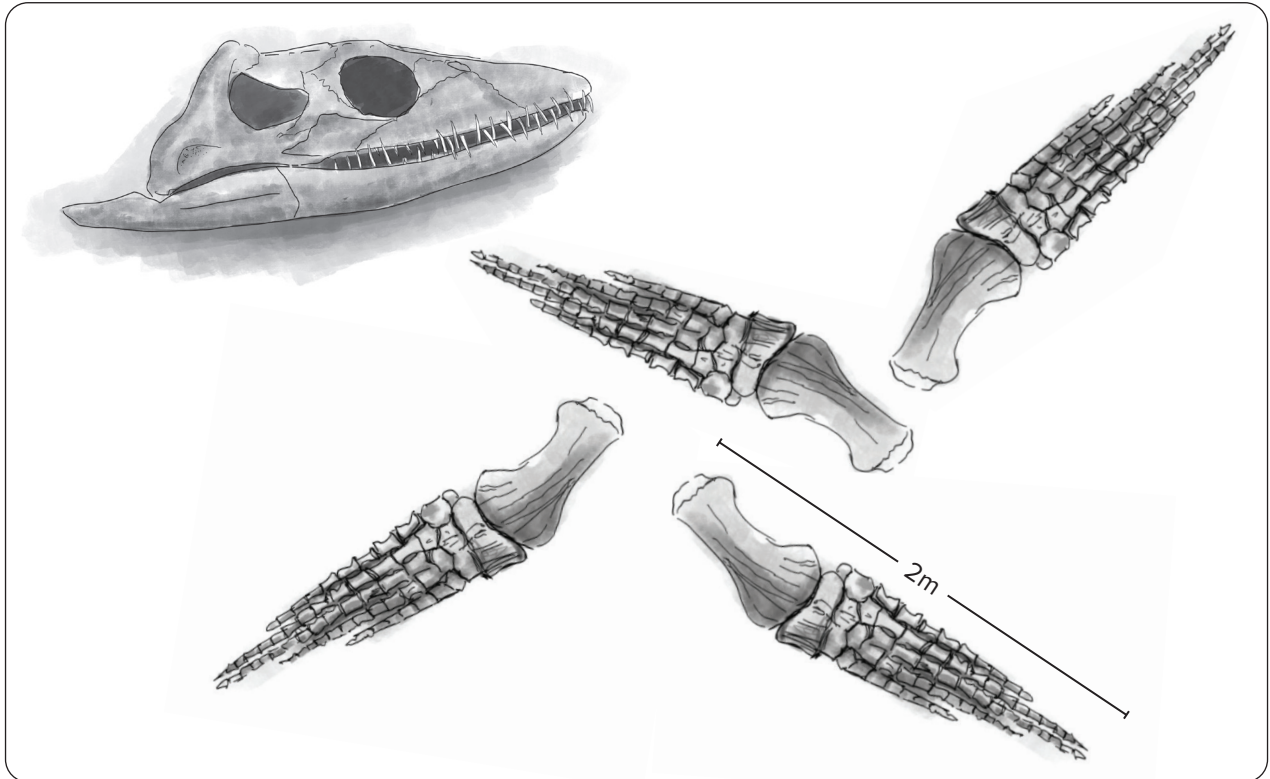
Next Generation Science Standards

3-LS4-1   Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

MS-LS4-1   Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.

DE ❤s Standards