



Fossils

Early Years -Teacher's notes



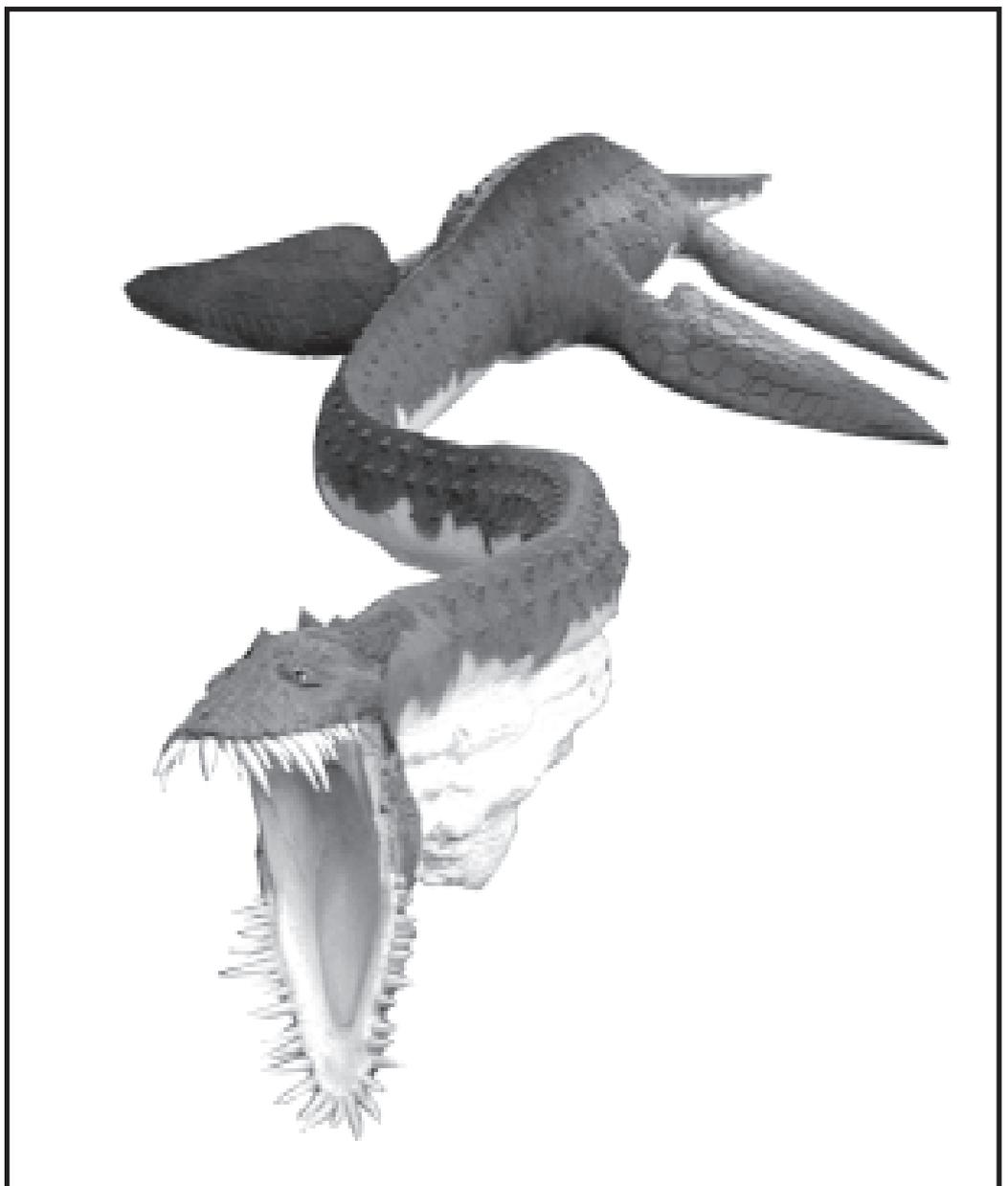
Government of South Australia
Department of Education and
Children's Services

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South Australian Museum Education Program

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Visiting the museum

Student expectations

We would like you, and all our visitors, to enjoy visiting the museum.

- Please stay with your group.
- Walk safely around the exhibitions.
- Share the space with other visitors.
- Talking is an important part of learning. Please remember to use a quiet voice.
- The museum glass cases can get dirty or scratched. Please enjoy looking without touching.
- Please use the stairs and avoid the lifts. (They are slow and are needed by people who can't use the stairs.)
- Help keep the museum clean. Please eat and drink outside on the lawns.



Visiting the museum

Teacher expectations

Bookings are essential for all school visits to the museum.

Please supervise your groups of learners at all times. If your visit involves visiting more than one gallery, divide your class into small supervised groups. Respect the needs of other classes that have booked particular galleries. **Parents must specifically consent to students under 18 participating in activities involving indirect supervision.**

When you arrive please let the staff at the front desk know. If the weather is fine, your students can enjoy the outside lawn area while they wait.

Do not use clipboards with metal backings and clips. For your convenience and for the safety of our exhibits, cardboard backings are available at the front desk.

The coffee shop and the museum shop do not cater for large groups. Small groups can visit, with adult supervision. Bags must not be taken into either shop.

Only students with special needs should use the lifts. (Many students visit the museum and using the lifts would cause excessive delays for people who really need them.)

Unfortunately the museum has limited capacity to store bags. A large crate or two for lunches is easier to keep secure.

Supervisors' bags must be left at the security desk, or be inspected and tagged by the security officers.

Program introduction

The Allosaurus skeleton on the top of the museum security desk near the entrance greets students before they set off in search of South Australian fossils.

Students visiting the Origin Energy Fossil Gallery travel back in time and discover opalised fossils of plesiosaurs, ichthyosaurs, ammonites and diverse shells from the Age of the Dinosaurs.

Occasionally students will be able to observe palaeontologists at work in the Megafauna Gallery preparing fossilised skeletons of Diprotodons recently discovered at Burra.

In a new display about Ediacaran fossils from the Flinders Ranges, students discover fossils of animals with soft bodies such as *Dickinsonia costata* which looked like a flat worm. They were buried here in an ancient sea bed approximately 560 million years ago, which makes them some of the world's oldest animal fossils.

Program aims

This program builds on childrens' fascination with dinosaurs and introduces them to the extraordinary life-forms that have inhabited South Australia in the past. It also facilitates the development of students' **Thinking** skills and consideration of **Future** perspectives. Students,

- develop a basic understanding of the way scientists use evidence to build a picture of past life on Earth;
- pose questions about how the environment in South Australia has changed and the impact upon life of the past.
- imagine what life might be like in the future.



Curriculum links

The teaching and learning programs about fossils on display are based on key ideas outlined in the SACSA learning areas **Science** and **Society & Environment**.

Science - key Ideas

Life systems

Students,

- investigate the features of prehistoric animals through direct experience.
- explain, and share with others, their understandings of the connections between ancient living things and past environments.
- build a vocabulary of scientific terms, and use terms and names to describe living things of the past and the functions of skeletons and other internal and external body parts.

Society and Environment - Key Ideas

Time, continuity and change.

Students,

- investigate fossils and begin to develop skills in analysing and representing the concept of time - present, past and future.
- discuss what people have done in the past to cause the extinction of animals. What does this mean for the way we need to act in future? What do we want future environments to be like?

Museum web links

The South Australian Museum website has more information about the Origin Energy Fossil Gallery and online activities for students. The address is, www.samuseum.sa.gov.au/fossils/index.html **Australian Museums Online** has a very good interactive site for students called **nature culture discover** Students can design their own exhibition using fossils at the following address, <http://australianmuseum.net.au/minerals-and-fossils>

Teaching strategies

If you have booked an **education officer**, they will provide your class with a lesson tailored to suit the learning needs and interests of your students as outlined on your **School Visit Form** (returned to the museum after confirmation of your booking).

If you do not have an education officer, this program can be **self guided** and the **teacher notes** and **activity sheets** have been designed to complement the fossil program for Early Years students. Teachers can also arrange access to the hands-on collections by prior arrangement with an education officer. A brief training session on how to access and use the collections is a prerequisite and a suitable time to do this can be negotiated by contacting the Education Centre at the museum. Ph 82077429.



Students are encouraged to look around and explore the Origin Energy Fossil Gallery on Level 3 before starting the more structured activities.

A lesson with an education officer will last approximately 30 minutes and involve an introduction to the displays using our collections of hands-on specimens which offer a more extensive first-hand experience. Students will be introduced to ideas about,

- the various ways fossils are formed;
- important South Australian fossil finds;
- what we can learn from the fossil record.

After an introduction, your class can be divided into small groups of 4-5 students with an **Adult Group Leader** to act as a guide for follow-up activities.

Activity sheets have been designed for the students to focus their attention on points of interest in the Origin Energy Fossil Gallery, other relevant galleries and outside the museum.

Children in Early Years (pre literacy) can work in small groups with an **Adult Group Leader** acting as a scribe or in pairs to record their own answers on a record sheet. A background information sheet for group leaders is included in this program to assist them guide children through the displays.

The background information sheets “**The adventures of two young palaeontologists at the museum**” are designed for children as a pre-visit activity or for use after a visit. The conversation between Imogen and Harriet could be read aloud. This can also be viewed on the museum’s website.

<http://www.samuseum.sa.gov.au/fossils/fgw8.htm>



Guide for **Adult Group Leader**

These instructions will help you focus your students' attention on the fossil exhibits. Their responses may be recorded on the **group record sheets**.

Fossilised tree (Outside the museum east wing near the stairs)

Upon arrival at the museum, students can look at the fossilised tree while a teacher informs the museum security staff of your arrival. Ask your students to touch the fossilised tree and discover what it feels like. Their response can be used to answer questions such as **'What is a fossil?'** and **'How are fossils formed?'** The tree fell into a lake after it died and was saturated with mineral rich water. As it dried out minerals replaced the wood. The adjacent museum walls are made of limestone from Murray Bridge and contain shell fossils that can also provide students with more evidence to answer these questions.

Allosaurus atrox skeleton (Museum foyer above the security desk.)

Students entering the museum will quickly discover the Allosaurus skeleton. Ask them to tell you what kind of dinosaur it is. **Is it a meat eater?** (Look at the teeth) **What if it came back to life, could you run fast enough to get away from it?** (How many legs did it have?) Ask them if they can see an ankle bone. We know a dinosaur like this lived in Australia because a fossil of a similar ankle bone was found in Victoria.

Tyrannosaurus rex skull (Ground level outside World Mammals Gallery)

By looking at the shape of its teeth, your students can answer the question **"What did it eat?"** Terminology can be reinforced eg **'carnivorous'** and **'herbivorous'**. Other questions might include **"Why are some teeth smaller than others?"** Because some were broken and are growing back. Or **"Why are there large holes in its skull?"** Because its skull would be too heavy if it was solid bone. Or **"What colour are these bones?"** They have changed colour because the bone has been replaced by minerals.

Plesiosaur (Level 3 Origin Energy Fossil Gallery)

Encourage your students to find the plesiosaur model and look for evidence that will help them answer the questions **"Where do they think it might have lived?"** They were sea swimming reptiles. **"What do they think it might have eaten?"** It had many sharp teeth well adapted for eating belemnites (like a squid) and fish.

Ask your students to look closely at the opalised skeleton of the plesiosaur. Ask them **"How do you think it became a fossil?"** It died and was buried in the mud on the seafloor and eventually it turned into stone (which later turned into opal) **"What parts of the plesiosaur skeleton are missing?"** The skull, some parts of its flippers and also its backbones (vertebrae) were probably washed away after it died.

Opalised shells (Level 3 Origin Energy Fossil Gallery)

Encourage your students to look closely at the opalised shells. Ask them “**What other animals lived in the sea when the plesiosaurs were alive?**” (120 MY ago). Animals with hard outside shells eg cockles. Also ask them to watch the film on the wall and describe other animals eg the ichthyosaurs fighting, or the ammonites with tentacles.

Flat worms and seapens (Level 3 opposite the big lift)

In the gallery your students will discover the oldest animal fossils. Ask them to look for fossils on the back of the stone slabs and talk with them about **where they might have lived**. They lived in the sea here over 500 Million years ago. (flat worms and seapens had soft bodies and only left an impression in the sand when they died.)