DINOSAURS!
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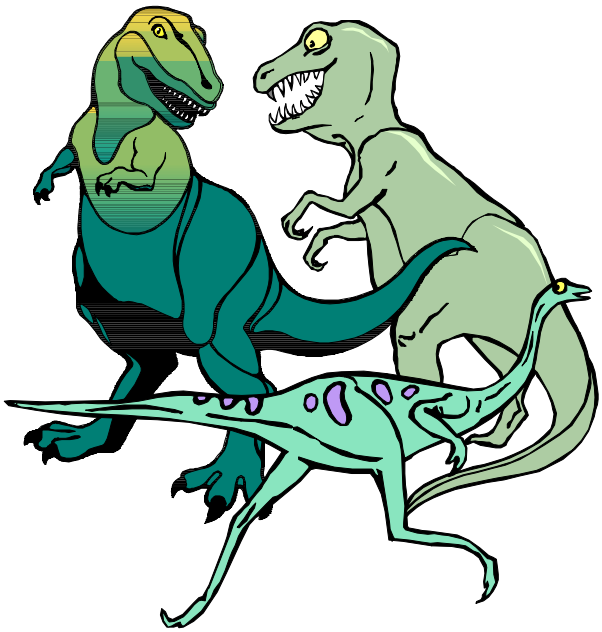

CFE 3230V

OPEN CAPTIONED
BARR MEDIA GROUP
1994
Grade Levels: 4-8
15 minutes

DESCRIPTION

Explains how scientists learn about dinosaurs. Paleontologists use detective techniques to uncover fossils. They deduce how dinosaurs lived, what they ate, how they moved, and how they cared for their families. Visit a dig and learn how fossils are preserved for study. Watch a skeleton be reconstructed. Leslie Nielson hosts this presentation.

INSTRUCTIONAL GOALS

- To describe the duties of a paleontologist.
- To introduce a variety of dinosaurs by name and appearance.
- To observe the reconstruction of fossilized remains of a *Pachyrhinosaurus*.
- To demonstrate the production of a model dinosaur from a two-dimensional drawing based on its fossilized remains.

BEFORE SHOWING

1. Read the CAPTION SCRIPT to determine unfamiliar vocabulary and language concepts.
2. Present a time line including prehistoric eras to modern times.
    a. Highlight the years from Columbus to the present to emphasize the vast difference between the current time period and that of dinosaurs.
    b. Explain that not all dinosaurs lived together simultaneously. Briefly name the different eras.
3. Mention that the dinosaurs on-screen are computer-generated images. There are no actual pictures of dinosaurs.
4. Define *fossil*.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Pause at scenes detailing several dinosaur types. Observe similarities and differences in size and structure.
3. Pause after the artist begins drawing a dinosaur from the information provided by the fossils.

AFTER SHOWING

Discussion Items and Questions

1. How soon after dinosaurs became extinct did the first humans appear on earth?
2. How do the hip and leg structures of dinosaurs give paleontologists so much information about their age and group?
3. How did some of the physically smaller types of dinosaurs survive predators several times their size?
4. Why aren't dinosaurs that flew classified as birds? When did the first birds originate?
5. What animals preceded dinosaurs on earth?
6. In which regions of the earth are fossils mostly found? What other species are commonly fossilized?
7. Discuss the advantages of the following features in dinosaurs: long-necked, horned, duck-billed, flying, four-legged, and herbivorous.
8. How long does it take a living organism to fossilize?
    a. Why are fossils usually found in sedimentary rock?
    b. How do paleontologists differ from archaeologists? Which use fossils in their work?
9. Compare abilities and features of dinosaurs with those of birds, mammals, and reptiles.

Applications and Activities

1. Determine what dinosaur types roamed the local area. Hypothesize why the area was conducive to them.
2. Assemble a dinosaur model from a kit available at a hobby store. Label parts and write a description, including the era in which it lived.
3. Compile a book of dinosaurs. Assign specific dinosaurs to individuals or work cooperatively.
    a. Using one page for each dinosaur, list the era in which the dinosaurs lived, its size, the region in which it lived, if it was herbivorous or carnivorous, and other notable features.
    b. Print computer-generated pictures or trace pictures from a book to accompany the information.
4. Write a children's story about a dinosaur's life. Illustrate it and read it to a child or class.
5. Calculate the exact height and length of a *Tyrannosaurus rex*.
    a. Draw an outline of the dinosaur on $^{1}/_{4}$" corrugated plastic.
    b. Draw large jigsaw pieces filling the shape. Carefully using a razor-edged knife, cut the pieces and pile them aside.
    c. Assemble the puzzle.
6. On a flat permanent surface, create a dinosaur environment using oil-based clay for hills and artificial trees.
    a. Make crevices and lakes, and add water.
    b. Place plastic dinosaur figurines in their appropriate environments.
7. Watch a feature film about dinosaurs.
    a. Identify as many dinosaurs as possible and note their authenticity in the film.
    b. Discuss the possibility of dinosaurs and humans coexisting on earth.

8. Using a detailed plastic figure or model, sketch a dinosaur.
    a. Label and display.
    b. Draw another sketch, this time from a written description with no model.
    c. Invent a dinosaur. Sketch it, list features, and give it a scientific dinosaur name.
9. Research the meaning of the suffixes: *-saur*, *-saurus*, *-odon*, *-alus*, and *-ophus*.
10. Research whether the trees and foliage millions of years ago were larger than those of the present. Discuss how scientists know this.
11. Research how a dinosaur becomes a fossil.
    a. Why is so much time necessary for bones to become fossils?
    b. What minerals in the soil strengthen bones during fossilization?
12. For further information related to dinosaurs, contact:
    a. Royal Tyrell Museum
       c/o Midland Provincial Park
       P.O. 7500
       Drumhaeller, AB T0J 0Y0
       CANADA
    b. (http://www.pvisuals.com/dinosaur_museum/dino_links.html)

WEBSITES

Explore the Internet to discover sites related to this topic. Check the CFV website for related information (http://www.cfv.org).

CAPTION SCRIPT

Following are the captions as they appear on the video. Teachers are encouraged to read the script prior to viewing the video for pertinent vocabulary, to discover language patterns within the captions, or to determine content for introduction or review. Enlarged copies may be given to students as a language exercise.

(Leslie Nielsen narrates)
There was a time when mammals
were not the dominant form

of life on earth,

when a great race of reptiles
ruled unchallenged

for more than 140 million years.

Their kingdom was one
of astounding diversity,

from gentle herbivores that
grazed on the rich plant life,

to ferocious carnivores
that preyed upon them.

Many were large but equally
as many were small.

They had adapted to suit
every environment.

Their varieties of form and
lifestyle were so fascinating

that today, 65 million years
after the last of their kind

roamed the earth,
man's curiosity drives him

to seek out their petrified
remains,

searching for insights
into their lives.

Nothing captures the imagination
quite like dinosaurs,

probably because,
unlike dragons of folklore

or monsters of science fiction,
we know that dinosaurs existed.

They roamed the earth
millions of years ago.

Because of our fascination
with them,

they are reborn in our museums,
books, and movies.

They came in all shapes
and sizes,

from the lumbering 50-ton
Brontosaurus

to the king of all
the dinosaurs,

the ferocious *Tyrannosaurus rex*.

Let's spend some time
in the detective world

of the paleontologist
and follow the reconstruction

of a *Pachyrhinosaurus*, a
dinosaur that lived in Alberta,

70 million years ago.

Here in this matrix they lie.

A treasure trove of fossils
waiting to be discovered.

For one dinosaur,
the *Pachyrhinosaurus*,

a new life is about to begin.

This is where it all starts.

The paleontologists in the field
uncover an exciting find.

The fossilized remains
of a *Pachyrhinosaurus*.

Larger tools such as hammers
and chisels are used

to remove the heavy rock layers
covering the fossil

to within a few centimeters.

Here the fossils are removed
and bagged for transportation

back to the museum lab
for further research.

The unfolding story
of the dinosaur

does not end with the excavation
of fossils in the field.

It continues here in the lab,
where the fossils

must now be restored.

It takes several hours
to several days

to prepare a single bone.

And it may be months before
an entire animal is completed.

When the fossils arrive at the
lab, they're usually in pieces.

The first step is to reassemble
and glue each bone.

Once the fossil has been freed
of rock and dirt,

the gaps left between
the fossil pieces

are filed in with plaster.

Technicians must be very careful
not to obscure

the natural contours
of the bone.

After the plastic patches dry,
they are buffed and polished.

A large vacuum hood is used
to eliminate the fine dust

and debris.

A thin airtight sealant
is then applied

over the entire bone
to protect the fossil

from everyday handling
during research.

Now that the bone has been
restored and protected,

it can be studied
more thoroughly.

This computer graphic shows
us where this bone was located

on the *Pachyrhinosaurus*.

One wonderful thing
you notice about dinosaurs

is that they have things growing
out of their faces:

prongs, tchotchkes, horns,
hornlettes, and frills.

Usually there's a big horn on
the nose, maybe over the eyes--

dangerous weapon, antipredator.

What about the tchotchkes?

These bumps and prongs
in horned dinosaurs

were color-coded so that a male
Pachyrhinosaurus bull

looking across the landscape
in early spring

could pick out his own species--
the fertile females.

Dinosaurs hatched from
amazingly small eggs.

The egg couldn't be too large

because the larger the egg,
the thicker its shell.

The thick shell would mean
no escape for the hatchling.

Hatching was the least of the
baby *Pachyrhinosaurus's*
problem.

Struthiomimus was a constant
threat,

a keen opportunist who would
steal a meal wherever possible.

He was equipped with a beak
perfect for cracking shells.

The tender insides of dinosaur
eggs were a favorite food.

A few years ago,
we knew that, in Mongolia,

little horned dinosaurs--
Protoceratops--laid nests.

We know from the new evidence,

herds and nesting grounds
in Alberta and Montana,

the big ones laid nests.

They constructed nests,
and guarded the eggs

as they incubated in the sand.

When the young hatched, unlike
a turtle, lizard, or snake,

they would be protected
and fed by the parents.

We're getting a picture
of *Pachyrhinosaurus*

as a socially integrated animal,
a good mother and father,

as a social context in which
the young hatches,

is fed and protected
from predators,

grows up in the herd
to become an adult,

engage in courtship,
and continue the generation.

The scientists at the Royal
Tyrrell Museum

have plenty of experience.

Thirty different species of dinosaur
have been constructed here.

The *Albertosaurus*,

Centrosaurus,

Troodon,

Stegosaurus,

Euoplocephalus,

Struthiomimus,

Parasaurolopus,

and some other creatures
we often mistake for dinosaurs.

Other animals that we often
think of as being dinosaur-like

are the *Mosasaurus*
and *Plesiosaurus*,

and even the big finback
Dimetrodon.

Dimetrodon is an animal that
has its legs out to the side.

So we know that
isn't a dinosaur.

A *dinosaur* is a reptile

that walks with its legs
directly underneath it.

Now, there are other animals
like the *Pterosaurus*

that people think of as
dinosaurs--the flying reptiles.

Until we understand
how their legs work,

we're not sure that
they are a dinosaur.

Right now, they're left out.

(narrator)
The *Quetzacoatlus*
with its 16-meter wingspan

was the largest
of the pterosaurs.

Although this carnivore survived
mainly on a diet of fish,

vulnerable dinosaur young
were easy prey.

The *Albertosaurus*,
one of the most highly evolved

of the carnivorous dinosaurs,
often preyed upon

the *Pachyrhinosaurus*.

Even with the advantages
of its height and senses,

powerful thighs,
and razor-sharp teeth,

the *Albertosaurus* was not always
the victor.

Working on dinosaurs is
interesting to me personally.

We get positive reinforcement
of other people

being interested in the subject,

and this leads to some very
fascinating collaborations.

There are people who do films
on dinosaurs,

science fiction books,
and comic books.

Children are fascinated
with dinosaurs,

and artists are fascinated
with dinosaurs.

I enjoy working with artists
because they

bring images of how these
animals lived,

and what their world was like,
to life.

(narrator)
The excitement of interpreting
the life and anatomy

of a *Pachyrhinosaurus* continues.

Using information compiled
by the paleontologist

from the completed skeleton, the
artist draws a scale diagram.

The complex musculature
is then reconstructed

over the skeletal drawing using
evidence from tendon scars,

and comparisons
with the dinosaurs'

closest living relatives:
crocodiles and birds.

With this two-dimensional
drawing as a guide,

in conjunction with
other evidence,

skin texture, the shapes and
sizes of teeth and horns,

and some educated guesswork,
the artist renders

a three-dimensional model of the
dinosaur as it looked in life.

[*roooaar*]

[*aheeeek*]

So, through their fossilized
remains, the *Pachyrhinosaurus*

have provided a peek
into their lives.

Through the reconstruction
of their skeletons,

we've learned how they look.

From the fossil remains,
that they lived in herds.

From their jaws and teeth,
that they were plant eaters,

that they laid eggs
and cared for their young,

that they migrated
in search of food.

So, thanks to the science
of paleontology,

we will continue to look back
in awe and wonder

at these mystifying creatures
from a prehistoric time.

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PH: 1-800-572-5580 (V).