

Brontosaurus Learning

Making science fun!



An Experiment about

Forces

Feel the Force

What you will need:

- A small, sturdy chair
- A clear place to land

What you will do:

- 1 Wait until your teacher has set up a safe area for this experiment.
- 2 Two people must stand either side of the chair. **It's your job to help people get up onto the chair safely.**
- 3 Take it in turns to jump up onto the chair. **How hard was it?**
- 4 Now concentrating on the feeling, jump from the chair onto the floor. **I'm trusting you not to be silly cadets!**
- 5 How did it feel? **Did you ever feel like you would float into the air, or did you feel like you were being pulled back to Earth?**

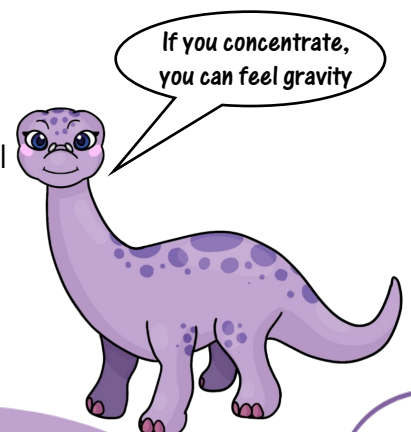
What is going on?

Gravity is a force that pulls everything toward the Earth, just like a magnet draws a paperclip towards itself.

When you jump down from the chair, gravity helps pull you down, but when you jump up onto the chair, you have to pull against gravity, so it is harder to do.

Challenges:

- Try jumping down with your eyes closed. Can you feel the force better?
- Imagine the gravity was turned off in your classroom for a little while. What would happen?
- How did we first "discover" gravity? Do some research to find out who, where and how we first learned about gravity.



TEACHING NOTES:

Brontosaurus Learning Experiment:
Forces F02

Topic: Forces

Key Concepts:

- ♦ Gravity is a force

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Gravity 01 – one copy per student
- Low, sturdy chair and a soft, cleared place to land.

Lesson Notes:

Begin the lesson by asking students what they know about gravity. Brainstorm their answers, even if they are not correct – at the end of the unit you can go back and review their first thoughts and see what they have learnt.

As a class discuss the experiment prior to undertaking it, and students should complete the sections of their Investigation Report IR01 from "Title to "Hypothesis".

Be sure to have a space cleared for the experiment that has nothing in it children could fall onto or into and hurt themselves. Choose 2 responsible students to "spot" the other students and help them up or down from the chairs. By taking turns the students can observe the other students' attempts too.

Remind students to listen carefully to instructions, and to OBSERVE their experiment, taking special notice of their feelings eg tummy flutters, muscles working hard etc. Remind everyone of their responsibility to be careful and safe.

If you have time the students could repeat the experiment with closed eyes.

What should happen in this experiment, and why?

This activity is more about awareness and feeling, so students should report that jumping up is much harder than jumping down, and that it took much more muscle power and energy to jump against gravity than with it.

You could also challenge them to try stepping off the chair rather than jumping, and discuss that gravity still pulls them back to Earth.

Follow up discussion questions:

- What keeps Australians on the Earth when they are hanging from the bottom of the globe?
- What can you find out about how gravity was discovered?
- Can you research any explanations of gravity from ancient cultures?

Investigation Record



Experiment Title:

Scientist (that's you!):

Materials: What will I need?

Investigation—what am I going to do in this experiment?

Diagrams are a great idea!

Hypothesis: What I think will happen:

Observation: What I SAW happen:

Diagrams are a great idea!

From my investigation I learnt:

Great work scientist!