

Challenge!

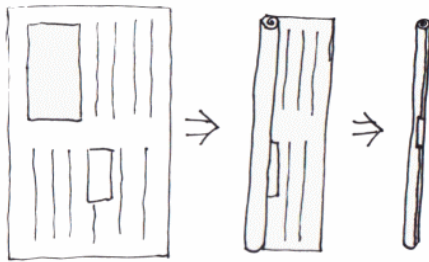
Newspaper Fort



The challenge:

To build a stable structure entirely from rolled newspaper and masking tape.

The rules:



1 To create the structure, you must roll up 2 to 4 sheets of newspaper together and secure them with masking tape. You can then join the rolled newspaper beams together with masking tape to make a structure.

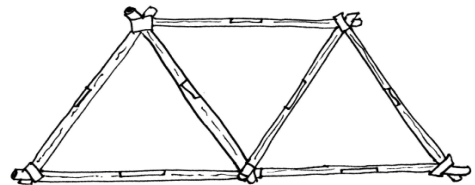
2 When your structural frame is complete, you can line your walls with sheets of newspaper.

3 Some structures you might like to consider:

- A fort or cubby house
- An igloo
- A bridge (not very high off the ground!)

What is going to happen?

You will be working as part of a team to build a structure. You will need to make sure all your team members contribute to the design and the construction.



Hints:

- Experiment with different shapes to find the ones that create the most stable structures. Triangles are better than squares, for example, so think about cross bracing any square or rectangles in your structure. **THIS MEANS PUTTING AN EXTRA BEAM BETWEEN THE DIAGONAL CORNERS OF A SQUARE SHAPE.**
- It's a good idea to draw your design before you build.
- Remember that you are building in 3 dimensions. How can you put the walls together to make your structure stronger?

TEACHING NOTES:

Brontosaurus Learning Challenge 02

Lesson Notes:

Engineering challenges are excellent for developing scientific thinking skills. Students must consider the variables, develop a hypothesis for what might work, then experiment and assess the results. The best part about an engineering challenge though, is that they will be having so much fun they won't even realise they are learning!

I strongly recommend that this challenge be competed in small groups, depending on the space available for construction. 3 or 4 structures in an average classroom is enough, so split the class into 3 or 4 groups. If you have more room, you can have more but smaller groups.

It is also a good idea to give the students time to experiment with the methods of joining the newspaper beams and to trial different shapes before they begin the challenge in earnest. 2 to 3 sheets of newspaper rolled into each log seems to be the best balance of strength and weight, and they can be rolled from the short edge or the long edge, or diagonally. Younger students might find rolling diagonally easier, but be sure to cut the uneven edges off each end before they begin construction.

How much assistance you give to your class for this project is up to you and will depend on the age and ability of the students. I suggest you start with:

- a discussion of the challenge,
- answering questions about the rules and,
- Giving a few clues including which shapes have the most structural strength and stability. You could even show the class a few images of structures including buildings, bridges, pyramids etc and discussing the shapes you can see in them.

You may also choose to offer a prize for the best invention, but be sure to decide on the criteria (inventiveness, teamwork, best decorated etc) in advance. All successful structures and cooperative groups should be acknowledged in some way – perhaps photos in the school newsletter or on a bulletin board?

Why not issue a challenge to other classes or even nearby schools to join you?

Perhaps the parents could be invited to join in the festivities too – make a day of it!

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!