BUILD A BRIDGE

ACTIVITY DESCRIPTION

Children develop an understanding of the steps required in planning, as they consider design, construction and materials to build a bridge. They plan, design, test and evaluate different bridge designs to suit community needs. They investigate suitable options, learn engineering principals behind bridge building and consider safety and risk in their final product.

THEME

- Design
- Materials
- Construction

MATERIALS REQUIRED

- Paper drinking straws
- Icy pole sticks
- Paper cups
- Blue tac
- Masking tape
- Glue
- Cardboard
- Scissors
- Design template – attached
- Puffing Billy Railway Virtual Tour #6, Monbulk Creek Trestle Bridge, https://www.youtube.com/watch?v=CCKljOiVm90
- Evaluation sheet – attached
- iPads or cameras to record childrens work
- Art book or maths grid book to record design drawings

INSTRUCTIONS

Either individually or with a grown up, children watchVirtual Tour #6: Monbulk Creek Trestle Bridge with the Puffing Billy infrastructure manager. This provides children with background information on bridge construction and exposes them to technical terms and language.

THE BRIEF

Two towns in the beautiful Dandenong Ranges are opposite each other with a river in between. They have been using a boat, to move goods and people between the two towns. It is a very slow process and often when the weather is extreme the boat is cancelled for safety reasons. The residents are getting very frustrated with the situation and as the town's population is increasing, the boat is not adequate to meet community needs. The solution is to build a bridge to expand over the river and enable people and goods to travel across more freely. Not all members of the community agree with the new bridge, they would like to see a range of designs before they allow construction. Your bridge needs to span 40cm (40 metres) and needs to be 10cm (10 metres) wide. Your bridge needs to support a reasonable amount of weight to cater for community needs. The cost of their bridge also needs to be considered. The children should try and create the least expensive bridge. As an extension activity children could use items around the classroom to test the structural integrity and design of their bridge. Classroom items could be substituted for materials carried by the train. Examples: a stapler equates to 5x logs, a marble equates to a person etc.

MATERIALS	COST
Paper Straws	$5,000 each
Icy pole sticks	$1,000 each
Paper Cups	$10,000 each
Cardboard	$1,000 each
Glue, pins, clips, tape	$500 each
Scissors Hire	$1000 per half/hour

Children are to carry out the design and technology task, which is to design and construct a bridge made of the materials provided. Get children to discuss factors and conditions to be considered when designing and building a bridge.

1. DIMENSIONS

- Width and size of the bridge
- Cost
- Effective use of materials

2. ENVIRONMENTAL FACTORS

- Weather and local conditions
- Topography
- Soil type

3. AESTHETICS

4. HEALTH AND SAFETY REQUIREMENTS

Allow children at least 30 minutes for discussion, construction and test of design.

Remind Children that its “ok” for their design not to work. They can evaluate and re-design. It is all part of the process.

Children, with the help of a grown up, then construct their bridge using their knowledge of materials, keeping in mind it needs to meet community expectations.

PLAN AND DESIGN TEMPLATE

NAMES:

OUR CHALLENGE IS:

MATERIALS REQUIRED:

OUR DESIGN

EVALUATION SHEET

NAMES:

THE CHALLENGE WAS:

STEPS THAT WERE TAKEN TO PLAN, DESIGN AND CONSTRUCT THE BRIDGE

IMPROVEMENTS WE MADE

WHAT IMPACT WILL THE BRIDGE HAVE ON THE COMMUNITY?