

1. K'Nex Bridges

Classroom Activity:

Design and build a bridge using K'Nex. Use appropriate vocabulary to describe the bridges.

Grade: 1

Strand(s): Understanding Structures and Mechanisms

This task addresses the following overall expectations:

- assess the impact on people and the environment of objects and structures and the materials used in them;
- investigate structures that are built for a specific purpose to see how their design and materials suit the purpose;
- demonstrate an understanding that objects and structures have observable characteristics and are made from materials with specific properties that determine how they are used.

and the following specific expectations:

- assess objects in their environment that are constructed for similar purposes in terms of the type of materials they are made from, the source of these materials, and what happens to these objects when they are worn out or no longer needed;
- investigate characteristics of various objects and structures, using their senses;
- investigate, through experimentation, the properties of various materials;
- use technological problem-solving skills, and knowledge acquired from previous investigations, to design, build, and test a structure for a specific purpose;
- use appropriate science and technology vocabulary, including experiment, explore, purpose, rigid, flexible, solid, and smooth, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes;
- describe structures as supporting frameworks;
- describe the function/purpose of the observable



characteristics of various objects and structures, using information gathered through their senses;

- identify the materials that make up objects and structures;
- identify the materials that make up objects and structures;
- describe the properties of materials that enable the objects and structures made from them to perform their intended function and the Environment

Assessment Categories:

- Thinking and Investigation
- Communication

Cross-discipline connections:

Language

Type of Activity: small group work

Preparation: (approx 45 min)

Build model bridge with all components.

Name cards of different components of bridge e.g., beam, pier, deck, ramp, railings. Boats (a cardboard boat or toy boat).

1. K'Nex Bridges (continued)

Time needed to complete the task: 90 minutes (depending on scheduling this task can be divided into two 45 minute sessions).

Materials/Resources for teachers:

K'Nex Bridge Building Educator Guide (available through the school or at suppliers of educational materials)

K'Nex Print building instructions Chart stand or blackboard

Materials/Resources for students:

K'Nex Print Building Instructions

Paper "river"

K'Nex

Cardboard "boat"

Activity Description:

Session 1 (45 minutes)

Discuss as a whole class:

- "What is a bridge?"
- "What are the obstacle that prevent people from getting from one place to another?"
- "Why do we need bridges?"
- "What factors do we have to think about when constructing a bridge?" Summarize key points on chart paper or on the blackboard.

Divide students into small groups to design and build a bridge using K'Nex, which will cross a paper river. A variety of boats must be able to pass under the bridge. The groups are provided with the paper river. Encourage them to add ramps and railings if time permits. Have each group show their bridge and describe how they decided to make it.

Session 2 (45 minutes)

Show the card of "Simple Beam Bridge" from the kit and a model that you have built that includes piers and cross supports Identify the components of a bridge (beam, pier, deck, ramp, railings). Make word cards with the names of the components of a bridge and have the stu-

dents label the bridge model. Students either modify their bridges or make new ones. They must incorporate all the components discussed. Upon completion of their bridge have students draw their design and label the parts of their bridge.

Tips

- If possible, take pictures of the bridges. This will make it easier for students to take them apart. Students' shouldn't use the grey rods in the kit.
- Show how different kinds of bridges can be expanded. Encourage students to expand their bridges.

Grade Extensions:

This task can be modified and used for

Grade 3 Understanding Structures and Mechanisms

Grade 7 Understanding Structures and Mechanisms