



# Quarrybrook

EXPERIENTIAL EDUCATION CENTER

## Program Title: **Structures**

**Audience:** 2nd-4th grade students

**Program Theme:** Students will be introduced to concepts such as forces, tension, and compression. Through hands-on activities, students will become more familiar with different structures, be able to identify strong structures, and have the opportunity to build their own structure outside.

**Program Goals:** Students will be able to identify points of force in structures as well as build strong structures.

### **Next Generation/Common Core Connections:**

**Topic:** K-2-ETS1 Engineering Design

**Crosscutting Concept:** Structure and Function

**Science and Engineering Practice:** Developing and Using Models

### **Program Outline:**



Teachers are always welcome to make any classroom-connecting comments that contribute to student understanding.

**Activity 1: STRUCTURES (15 min.)** – Students will be introduced to a variety of structures, and will then work together to match each structure with its name.

**Objective:** Students will know structural names.

**Intended Outcome:** Students will be able to recognize and recall structures by name.

**Activity 2: ACTING OUT STRUCTURES (30 min.)** – Students will next have the opportunity to form the structures, physically with teammates.

**Objective:** Students will physically form structures to gain a better understanding.

**Intended Outcome:** Students will be able to name the structures that their classmates are forming.

**Activity 3: WOODLAND HALL (15 min.)** – Next we'll head into Woodland Hall, our post-and-beam room, where the students will try to identify as many of the structural features as they can.

**Objective:** Students will recognize the structures they have been learning about, within a built environment.

**Intended Outcome:** Students will be able to recognize the structures and recall their names.

Activity 4: BUILD (60 min.) – Once students have an understanding of structures and how forces, compression, and tension work, they will have an opportunity to build a structure outside, with natural materials.

**Objective:** Students will build the structures discussed in Activities 1 and 2, such as a dome or a structure containing a column and a beam.

**Intended Outcomes:** Students will be able to assemble a structure, and compare its features with the structures built by other teams.

**Successful completion of this program will help support your students' proficiency in NGSS**

**Performance Expectations:**

K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.