

## **EEFA STEM Taskforce Activity: K'nex Bridge**

### **Activity Overview:**

Trusses work on the principle of triangular geometry to transfer loads safely. Each of the members in the truss is either in compression (pushing) or tension (pulling). The goal for today is to create a bridge out of the K'nex pieces that can safely span between two tables. There are different design requirements and restrictions that must be satisfied. This problem is similar to problems that engineers face everyday.

### **Material List (provided):**

- Two tables or desks 16" apart
- K'nex bins (~6) for each group of students
- Books to add weight to bridges

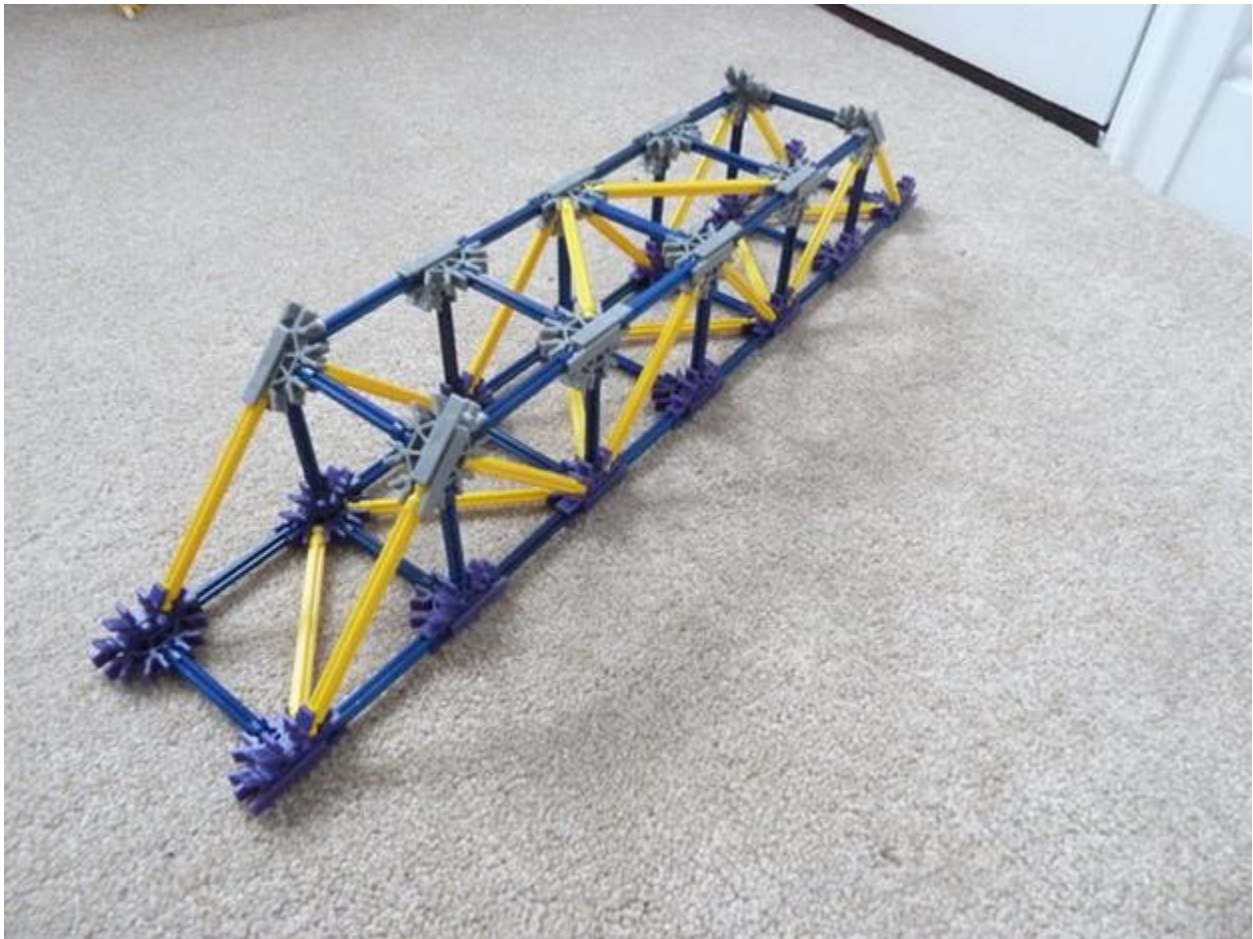
### **Instructions:**

1. Split the students up into 6 groups. Number off 1-6 and provide each team with a bin of K'nex pieces.
2. Design Requirements
  1. The bridge shall span 16"
  2. You are limited to the K'nex pieces provided in your team's bin
  3. Produce a safe structure
  4. Minimize the number of pieces required to span the 16"
  5. Minimize the amount of labor necessary to construct the bridge
  6. We will have 20 minutes to construct the bridges
3. Walk around during this time and help the students build their bridges by offering pointers and advice
4. After 20 minutes is up, we will load test the bridges with books/binders to see which bridge will hold the most load

### **Things to Keep in Mind:**

- HAVE FUN AND ENGAGE WITH PARTICIPANTS!!! 😊
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- Know your audience – Use vocabulary based on participant age and ask questions that the participant will understand. Tailor the activity to the participants as needed. Participants can work alone or in groups.
- This is an example of a truss that the students can build. You can decide if you want to keep this image available or just give the students a look and then come up with their own design.



### **Additional Challenges:**

- Bridge using the least number of pieces
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