Let’s Communicate **(Family Activity; Appropriate for all ages)**

**This activity can be easy or hard for the students depending on the amount of scaffolding they have and the setup of the activity. The purpose of this activity is to show how important good communication skills are to engineers. Often engineers must communicate with people without being present on the job. Two skills are necessary – 1) communicating effectively what needs to be done and 2) communicating effectively what has been done.**

**Setup: There are multiple ways of setting up this activity but the preparation for the activity remains the same. The key differences in setup are based on the amount of freedom that participants are given. In all setups, two people will sit across from one and another so that one person (engineer) can describe how to construct an object and the other person can do the constructing (builder). The participants must talk to each other and instruct each other about what has been built and what else needs to be done. Throughout the activity, the participants will not be able to see what the other person is doing. The helpers will need to provide assistance to both sides as they do the activity. Below are some different configurations for the activity:**

* **Two students do the activity with each other and the parents provide assistance to their child.**
* **The child and the parent do the activity together and the helpers monitor whether additional help is needed.**
* **The object that is to be built is predetermined and is provided to the participants. The builder will have all the pieces and the engineer will have the completed model. If this option is selected then multiple objects of different difficulty are needed for the different ages and skill abilities.**
* **The object that is to be built is determined by the participants during the activity. The builder uses the limited parts available and the engineer uses the same pieces to build the model that will be described.**
* **Typically each helper will need to monitor one station. If there are too many people doing the activity to support, then I would suggest that each engineer build something from the legos and have the builder construct the object from instructions from the engineer while the engineer builds it. At the end of the process the two participants should show their objects.**

**For this activity, a line will sometimes form and this is fine. For each grouping of people, you will need to decide how you want them to do the activity. As the options above indicated, there are many ways of doing this activity. Some of the information that the students and parents should understand is that engineers must communicate effectively in a detailed way to do their job well. The pairs need to set across from each other and cannot look at each other’s legos/object until the very end of the activity. At the very end, the objects can be compared. What the students and parents are creating are models. Explain that being very detailed and systematic is important and that maybe as one person explains what needs to be done the other person can explain what they are doing. The conversation can come from both the builder and the engineer. The helpers may need to intervene and help people who are struggling. Helpers should always be monitoring what is going on and being supportive and giving hints or asking questions. Attached to the boards (~14” tall) will be suggestions described in the guiding section.**

**Concepts:**

* **Engineering requires many groups working together to do parts of a project. Rarely does one person do an entire project. In most situations, people with specialized skills are asked to help in areas where engineers might not be knowledgeable. For example, engineers are capable of building things but may not have the greatest amount of practice. So a person trained in construction or fabrication are asked to help to get the job done faster, more precisely, and in a safe manner.**

**Guiding:**

* **Ask students very specific questions and even ask them to touch the object that they are trying to describe.**
* **Providing pictures of the objects being used and labeling them with names can also be helpful. For example, a cubed-shaped Lego could be described as a 4 pin Lego of a specific color.**
* **The students often need help with making good descriptions. So to help some students who are struggling you can play the I Spy with my Little Eye game to encourage them to be more descriptive. This will only work for older kids.**
* **For younger kids it may be necessary to make the model simpler. Also modeling how to talk back and forth is very helpful, like suggesting to the students to describe what the object looks like and then starting at the base and working upwards as if they were actually building it is helpful advice.**
* **Watch the kids and if they are showing progress then let them go but if they are struggling try to figure out what the problem is – lack of descriptive terms, not describing things in steps, not asking or confirming information, etc.**

**Suggestions on the Day of the Event:**

* **Discuss with the other people helping how the activity should be run in terms of pairing and constructing.**
* **Make a few models from the materials and discuss what students might have difficulty describing and how to help them.**
* **Make a few very simple models that use very different colors and shapes that can be used for students that may find the activity difficult.**