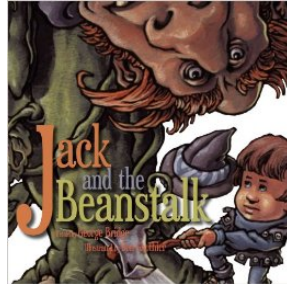


Jack and the Beanstalk



Jack has planted some magic beans. What happens once he plants them?

Materials: Book “Jack and the Beanstalk” male “Jack” figure (one per group)
DUPLO hula hoops measuring tapes

Intro: Review rules and process of engineering. Point to a chair. Ask students if the chair is safe to sit on. If yes, then why? The four chair legs give the chair something called **stability**. The legs make the chair not fall over. They make the chair **stable**. What if the chair had only three legs? Or two? What would happen when you sat in it? You would fall over! What invisible force pulls things over? **Gravity**. Engineers must work with the force of gravity when they designing things. When a chair is not safe, we say it is **unstable**. Making something stable will be a big part of today’s engineering challenge.

Story: Ask students if they know the story about a boy who planted some magic beans. What happened when the beans grew? How does a plant grow? Read aloud “Jack and the Beanstalk” and discuss elements of the story, and how the problems were solved.

Challenge: Explain that today’s challenge is going to be a contest. Which group can build the tallest and sturdiest beanstalk for little Jack to climb up? The beanstalk must be stable. Jack must be sitting on top of the beanstalk. What are some ways that something tall can be made stable? Each beanstalk must also stand alone. It cannot lean on anything or be held up by someone. Discuss the

idea of using a **base** (the lowest part or the lowest, bottom, or supporting part of a structure). How can a base help?

Build: Divide students into work groups. If you like, assign one student to be the foreman. The foreman will make sure that everyone works together and presents questions to you on behalf of the group. The foreman can also be responsible for measuring the height of each beanstalk. Monitor each group by observing student interaction and asking pertinent questions, such as ***“Why do you think your beanstalk keeps falling over? How can you keep it from falling over? Where will Jack sit?”*** Allow students time to build.

Debrief: Gather students together and discuss problems and solutions that might have come up during the build time. Ask: ***“What worked?” “What didn’t work?”***

Presentation: Visit each group’s construction. The group presenting are called the “Sitters” because they sit and describe what they’ve done. The teacher and the rest of the class are called the “Standers” because they stand around the presenters in a circle to observe and ask questions. The standers and the sitters change depending on the group presenting. As a class, decide which constructions solved the problems and why. Record the final heights of each stalk on the board. Which team’s was the tallest? The sturdiest? The most creative?