

High Rise Challenge

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The “E” in STEM: Meaningful Content for Engineering

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The big concept of the challenge I would like to present is structural, specifically the effect of the wind on high towers. When researching a design that would be age appropriate for the age of scholars I would like to facilitate this with, I was looking for something easy that would be fun, engaging, and definitely hands on. The design asks the scholars to build a tower that can support a tennis ball at least eighteen inches off the ground while withstanding wind from a fan.

The standards I choose to look at was second grade because of the age of scholars. I took the NGSS standards, a framework for K-12 science education. The standards that will be presented within the lesson are K-2 Engineering and design K-2-ETS1 1-3 a. b. c. these standards ask scholars to follow the process of questioning, developing, observing, exploring, testing, documenting, analyzing, interpreting, and problem solving. I also found that this makes connections with the Common Core state standards RI 2.1, W.2.6, w.2.8, SL.2.5. These state that scholars are expected to answer questions to demonstrate understanding, collaborate with peers to produce and or publish writing, recall from experiences or gather information from provided sources to answer questions, and create a visual display of experiences to clarify ideas and thoughts. Which I naturally made a connection of NASA's Engineering Design Process. This information was

retrieved June 8 from the Second Grade Performance Expectancies (May 2013)

www.nextgenscience.org/sites/default/files/2%20combined%20topicsf.pdf

The problem solving scholars might experience would be the stability of the structure, how to hold a tennis ball and the design of the structure itself based off the materials, constraints and criteria. The declarative skill of problem solving this would be introducing the scholars to the effects of wind on the stability of a tall structure using a short video clip. “How Tall Can a Skyscraper Get?”

SkyscrapersThe procedural example could be how the scholars will apply facts they know about tall structures and wind.

Our objectives would be that scholars will build a stable structure able to support a tennis ball 18 inches off the ground with wind from a fan. The scholars will increase speed of fan to complete observations and testing purposes for a variety of data. I will peak the interest of the scholars with “The Former Astro Tower Swaying in the Wind” Bruce Sherman (May 2013)

www.youtube.com/watch?v=ILVb9cQ-7JM and then begin the lesson.

