



SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS CLUSTER

LESSON 2

Lesson Plan Title: Bridge Design Challenge		Instructor:
Suggested Total Time for Lesson (minutes): 50-180 minutes (2-4 days)		
Content Focus - What Will Students Learn? (Content Skill Sets)		
<p>0972.ST.2461.7 Identify principles of the problem-solving process 0972.ST.2461.8 Outline the steps in the design process 0972.ST.2461.10 Analyze Solutions, identifying strengths and weaknesses 0972.ST.2461.11 Develop Details of a Solution 0972.ST.2461.12 Develop, test, and redesign prototypes 0972.ST.2461.28 Make an oral presentation 0972.ST.2461.31 Contribute to a team project 0972.ST.2461.8 Solve problems using appropriate units in engineering systems</p>		
Materials and Resources- What do you need to assemble and prepare before the lesson?		
Materials: <ul style="list-style-type: none"> Engineering notebook (composition notebook, digital engineering notebook example, purchased professional notebooks) Pencil ¾ in. Linking Cubes (2) 1 sheet of 8 ½ x 11 in. cardstock Assorted construction tools such as scissors 		Resources: <ul style="list-style-type: none"> West Virginia Bridge Design & Build Contest. (n.d.). Retrieved March 1, 2022, from https://wvbridgedesignandbuildcontest.com/ Bridge design contest: Presented by engineering encounters. Engineering Encounters. (n.d.). Retrieved March 10, 2022, from https://www.bridgecontest.org/
Lesson Outline: What learning activities will your students do?		
Time	Sequence/Description of Learning Activity	
10-15 minutes	Get Started/Explain: Students will be introduced to Engineering Notebooks through documentation of the Design Process Bridges will be introduced either through the WV Bridge Design Challenge, The Bridge Failure Case Study, West Point Bridge Design Contest, or the Paper Bridge	
30-150 minutes	Discover/Engage/Practice: Option 1 Students will research bridge failure Option 2: Students will complete WV Bridge Design Challenge Option 3: Student will complete West Point Bridge Design Challenge Option 4: Students will complete Paper Bridge Option 4: TSA Problem Solving Challenge	
10-15 minutes	Check for Understanding/Summarize/Close: Students will explain the challenges of working within Teams Students will elaborate on why it is important to clearly define design constraints prior to creating a product Students will explain how they came about deciding on their designs	
Modifications, Support, and Extensions (for those students with IEP)		
Reflection- Did the students learn the content outlined in the lesson focus? Why or why not?		