LESSON TITLE	Engineering a Water Tower				
SUBJECT (S):	Science (any topic)				
GRADE LEVEL:	6-12	**AUTHOR:**	Becky McKinney, MS		
TYPE OF LESSON (activity, lab, project…)	Activity			**DAY(S):**	1 day

OBJECTIVE

In a collaborative group, design and construct a solution for building a water tower. Analyze and reflect on the process.

NGSS/CC STANDARDS

NGSS
Science and Engineering: 1,2,3,4,5,6,8
Crosscutting Concepts: 2,3,4,6,7
Core Ideas: ETS1.B

PERFORMANCE EXPECTATIONS
Engineering: HS-ETS1-2, MS-ETS1-4

CC MATH
HS – MP.2, MP.4; MS – MP.2, MP.4

CC ELA/LITERACY
MS – SL.8.1

ASSESSMENT(S) & GRADING/RUBRIC

This is formative assignment. Ensuring that students have worked in a collaborative environment and filled in the worksheet adequately should suffice for assessment.

SUBJECT AREA(S):

Scientific process

TEXTS/MATERIALS/TECHNOLOGY/AUDIO-VIDEO/OTHER RESOURCES:

PER GROUP: 5 sheets of paper (8.5x11), water bottle, ruler, worksheet (1/group)
Teacher: PowerPoint, digital projector for introduction

INSTRUCTIONAL STRATEGIES/PROCEDURES/GROUPING:

Pass out the worksheet to the students. Using the PowerPoint presentation, teacher will facilitate lesson. Allow students to openly discuss introductory questions as a class. DO NOT pass out supplies until students have assembled into teams. Group in teams of 2 to 5 students.

If time allows, consider allowing students to build another tower with same supplies or possibly different supplies.

SAFETY/SECURITY ISSUES:
N/A
NOTES/REFLECTIONS:
A follow up lesson can be done that allows students to determine how this lesson IS the scientific process (breaking up into hypothesis, variables, tables/graphs, etc).

NAME _____ DATE _____

ENGINEERING A WATER TOWER

1. Why are water towers important to communities/living things?

2. What are the characteristics of water towers?

3. Why are water towers elevated?

4. What are the functions of water towers?

DRAWING OF WATER TOWER BEFORE BUILD	DRAWING OF WATER TOWER AFTER BUILD
Estimated Height in cm: _____	Actual Height in cm:_____

TABLE 1: Water Tower Data										
Height	**GROUP**									
	1	2	3	4	5	6	7	8	9	10
Estimated Height (cm)										
Actual Height (cm)										

Make a BAR graph of the data in the space below.

CONCLUSIONS

1. If you ended up making something different than the agreed upon drawing, WHY?

2. Which water tower do you think was the most successful? WHY?

3. If you could use ONE additional office supply material which would you use and why?