SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS CLUSTER

LESSON 4

Lesson Plan Title: Getting to Better	**Instructor:**

Suggested Total Time for Lesson (minutes): 45-65 minutes (1-2 days)

Content Focus - What Will Students Learn? (Content Skill Sets)

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.2461.48 Solve problems using appropriate units in engineering systems
0972.ST.2461.49 Demonstrate the principles and elements of design and demonstrate usage in the design process incorporating them into design solution
0972.ST.2461.50 Demonstrate the principles and elements of design in design solutions

Materials and Resources- What do you need to assemble and prepare before the lesson?

Materials:
- Activity 2 Getting to Better
- Reverse Engineering ppt
- Decision Matrix Template/Automated Template
- SWP Digital Notebook
- Paper
- Water Bottle (1 per class)
- Pencil

Resources:
- Actual size of Inch Ruler. (n.d.). Retrieved March 6, 2022, from *https://www.piliapp.com/actual-size/inch-ruler/*
- Nctm.org. (n.d.). Retrieved March 1, 2022, from *https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Isometric-Drawing-Tool/*
- Prof. Eduardo J. Stefanelli, profissão, E. S. E. por, Stefanelli, E., & profissão, E. por. (2017, January 23). Virtual dial caliper in thousandth of inch - simulator. Prof. Eduardo J. Stefanelli. Retrieved March 1, 2022, from *https://www.stefanelli.eng.br/en/simulator-virtual-dial-caliper-thousandth-inch/*
- Who we are. (n.d.). Retrieved January 10, 2022, from *https://www.jamesdysonfoundation.com/who-we-are.html*

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 Reverse Engineering utilizing Reverse Engineering ppt Students will be issued Activity 2 Getting to Better
30-35 minutes	***Discover/Engage/Practice:*** Students will form groups or teachers may assign groups of 3-4 Teacher will Place single Water Bottle of Choice in location that is viewable by entire class. Students may walk to the bottle and take notes but may not remove Bottle from the Working Area. Students will work within these design teams to reverse engineer a water bottle utilizing their best communication techniques. Students will come up with a product improvement for their water bottle.
10-15 minutes	***Check for Understanding/Summarize/Close:*** Students will present out their designs and complete conclusions questions for activity.

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?