

Unit Name: SuperFuture Design & Engineering

Time Frame: 3 periods

Author: Egg Harbor Township Middle Schools (6th Grade)

UNIT

Subject: **English/Science/Math**

Country: **USA**

Course/Grade: **6th Grade**

State/Group: **NJ**

School: **Egg Harbor Township Middle Schools**

UNIT SUMMARY

Students will collaborate to create a prototype for a teleporting vehicle designed for the future. They will send the building instructions and supplies for the prototype to the team of supervisors at SuperFuture Headquarters to approve. The supervisors will replicate the students designs based on their written instructions.

UNIT RESOURCES

- SuperFuture Design Packet
- One Ziploc bag filled with Lego pieces of the following:
 - One Lego person
 - 2x1 Lego blocks
 - 2x2 Lego blocks
 - Lego Flats
 - Lego Wedges

Internet Resource Links:

STAGE ONE

GOALS AND STANDARDS

SCI.7-8.5.1.8 – All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four science practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

ENDURING UNDERSTANDINGS

Scientific inquiry affords all learners opportunities to make observations, pose questions, develop hypotheses, design and conduct investigations, and analyze data to draw conclusions.

ESSENTIAL QUESTIONS

- How can observations and questioning help students to understand the world around them?
- How do I collaborate with others?
- What information is relevant to share with others?

KNOWLEDGE AND SKILLS

Students will understand that scientists use observations to pose questions about the world around them.

Students will routinely communicate and collaborate with others in an attempt to build knowledge and understanding, in addition to comparing their finding in a variety of formats.

STAGE TWO

PERFORMANCE TASKS

Teams will design and build their own prototype within a 10-15 minute time frame. They must follow the design criteria provided to create a unique, efficient vehicle. The team must also carefully write a step-by-step set of instructions so that the vehicle can be re-built at Headquarters.

OTHER EVIDENCE

Students will complete a literary component that causes them to reflect upon the results provided by the SuperFuture Design Team, along with a reflection rubric that causes the design team to reevaluate their initial design process and written directions.

STAGE THREE

LEARNING PLAN

Each SuperFuture Design team will design and build their won prototype with in a 10-15 minute time frame. They must follow the design criteria provided to create a unique, efficient vehicle. The team must also carefully write a step-by-step set of instructions so that the vehicle can be re-built at Headquarters. They will then give their prototype to a SuperFuture Supervisory Team for assessment.

As a SuperFuture Supervisory Team, each group's job is to test and approve the designs sent to you from the SuperFuture Design Team. The designers have provided the supplies and instructions for another group of students to replicate their teleporting vehicle prototype.

Students must carefully follow the instructions to re-create the design that the team made. This step is crucial because it will demonstrate if the design can be put into mass production.

When they have completed the task, they must call over one of the presidents of SuperFuture Technologies to take a picture of the completed prototype. That picture will be compared to the picture taken in the design lab to determine if the process was successful.