

Lesson Properties

Course: Principles of Applied Engineering

Unit: Principles of Engineering Design

Teacher: Rick Ortiz

Start Date:

August 21, 2017

Completion Target:

August 28, 2017

STAGE 1 – Instructional Target

Learning Objectives / Goals

- Ss will compare and contrast the Scientific Method and the Engineering Design Process.
- Students will complete Kill the King engineering challenge.
- Students will work in teams to develop an engineering solution to the design challenge.
- Ss will understand the importance of documentation in engineering.

Standards Addressed

§130.402.c.2.D, 2.E, 2.G, 3.B, 4. A

Cross-Curricular Connections

§112.34.c.1.B (Scientific Method)

STAGE 2 – Assessment

Performance Tasks

- Ss will construct a catapult that shoots ping-pong balls at a target.
- Ss will apply the engineering design process to research, design, and evaluate their working challenge solution.
- Ss will prototype and test their solutions in real time.
- Ss will apply iterative design principles to evaluate their completed product.

Secondary Evidence

- T will conduct informal observation and document findings in Observation Checklist.
- Ss will be evaluated based on the following categories: Craftsmanship (20%), Aesthetics (20%), Time Management (10%), and Functionality (50%).
- **Extension:** Ss can compete the Texas State Catapult Design Event in TSA.

STAGE 3 – Lesson Delivery

Instructional Strategies

Direct Instruction, Modeling, Self-Paced Assignments, Virtual Learning Environment, Blended Learning

Instructional Materials

Student Workstations, Internet Connectivity, Wooden Tongue Depressors / Popsicle Sticks, Plastic Spoons, Rubber Bands, Masking Tape

Differentiated Instruction Supports

- Provide accommodations/ modifications to Ss in accordance with IEP/ (SpEd.)
- Front-load instructional materials on virtual learning platform. (LEP)
- Provide online translation tools as needed. (LEP)
- Provide visual aids, graphic organizers, etc. as needed.