

Lesson Properties

Course: Principles of Applied Engineering

Unit: Dragster Design: Aerodynamics I

Teacher: Rick Ortiz

Start Date:

March 19, 2018

Completion Target:

April 13, 2018

STAGE 1 – Instructional Target

Learning Objectives / Goals

- Ss will research and apply STEM principles related to aerodynamics, physics, and engineering design.
- Ss will apply the iterative design process to solve the design challenge.
- Ss will understand the function of the structural subsystem of their dragster.
- Ss will apply physics principles to complete the design challenge such as Newton's 2nd Law, Motion, Mass, Force, and Drag.

Standards Addressed

§130.402.c – 1.C, 2.G, 3.A, 3.B, 3.D, 6.A, 6.B, 6.C, 9.A, 9.D, 10.D, 10.F

Cross-Curricular Connections

§112.39.C – 4.A, 4.B, 4.C, 6.A (Physics)

STAGE 2 – Assessment

Performance Tasks

- Ss will complete independent assessment activities in the WhiteBox Learning system.
 - Motion Quiz; Background Quiz;
 - Mass Lab
- Ss will individually design a solution to the design challenge inside the WhiteBox Learning simulation environment.
- Ss will test their design for compliance to challenge parameters and subsequently engage in (district-wide) competition to test the effectiveness of their design.

Secondary Evidence

- T will conduct informal observations and document findings using observation checklist.
- **Extension:** Ss will have the opportunity to enter completed physical dragsters into local competition sponsored by Western Tech.
- Ss will complete writing activities as part of the 'writing across the curriculum' initiative to encourage writing across all disciplines.

STAGE 3 – Lesson Delivery

Instructional Strategies

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

Instructional Materials

WhiteBox Learning System, Student Workstations, Internet Connectivity

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 aides, graphic organizers, etc. as needed.