

School to Career

Project-based Learning: Combining PTE Standards and Academic Standards

Authenticity Academic Rigor* Applied Learning* Active Exploration* Adult Connections* Assessment*

Project

Title of Project	Work Bench Project
Project Developed by	Ken Gould and Jason Benjamin
E-mail Address	gouldke@tfhs.k12.id.us benjaminja@tfhs.k12.id.us
School	Canyon Ridge High School
Pathway	Engineering
Course Title	Manufacturing/Informal Geometry
Grade Level	12

Authenticity

Briefly describe your project. Include the key question and provide an overview of what students do and learn. Tell why the question is meaningful to the students and where one might see a similar question tackled by an adult in the workplace.

Key Question	What is the significance of using surface area and volume to help model everyday technologies?
Overview	Students will measure and existing workbench in order to reconstruct a duplicate and a scaled model that will be used to create multiple different sizes. Constructing a replica of a workbench.

Vocabulary/Key Terms

List vocabulary words and key terms essential to student understanding.

Surface Area, Volume, length, width, height, x, y, z dimensions

Active Exploration * Applied Learning * Adult Connections

What classroom-based, community-based, and career-based activities does the project involve? Include a description of the active exploration, applied learning, and adult connections in the project.

Active Exploration How does the project engage students in real investigations using a variety of methods, media and sources? What field-based work will students perform? How does student learning and service support active career exploration?

Applied Learning How do students apply what they have learned and researched to a complex problem (e.g. designing a product, improving a system, creating an exhibit, organizing an event)?

Adult Connections Who from the community, workplace, post-secondary and/or industry partnership works with students on the project?

Classroom Activities

Measuring workbench

Make a scale model

Find volume of material need for scale model

Community Activities

Career Activities

Academic Rigor

Citywide Learning Standards Use the space below to list the citywide learning standards addressed by the project. (A list of standards is available at <http://www.skillslibrary.com/cdir/bpsstandards.asp> This page, which includes selected high school level standards, is designed to let you easily create a list of standards you are addressing. You may then copy and paste the list into this template.)

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

10.M.4.1.1 Recognize and apply congruency and similarity of two-dimensional figures. (351.01.a)

10.M.4.1.2 Recognize and use similarity as it relates to size variations in two- and three- dimensional objects. (351.01.b)

PTE

Drafting Geometry

Use measuring to accurately calculate an object.
Understand and use scale factor.

Drafting Design

Use sketching to convey ideas.

School to Career Competencies Please check (x) the competencies addressed by the project

Communicate and understand ideas and information

Collect, analyze and organize information

Identify and solve problems

Use technology

Initiate and complete entire activities

Academic Rigor

- Act professionally
- Interact with others
- Understand all aspects of an industry
- Take responsibility for career and life choices

Student Goal(s) Include student personalized goal(s)

Complete objective in a timely manner to a high quality standard.

Assessment

How do you and the students know the project is a success? What are your criteria for measuring students' achievement of the disciplinary knowledge and applied learning goals of the project? What evidence do they use to demonstrate their progress? What deliverables do they need to complete prior to the final exhibition?

Students will have a solid model of the workbench that will be scored based on the rubric.

Recommended Resources / Sample Products

Software or Materials Needed

(Examples)

Workbench, measuring instruments, solid works (software)

Teacher-Developed Materials

(Examples of materials that can be shared with other classes. Please attach samples.)

Teachers will create a starting sample.

Student-Developed Materials

(Examples of products that can be shared with other classes. Please attach samples.)

None yet

Final Words

(In a sentence or two, highlight your project's overall value.)

Students will be able to construct a working model that will allow them to create other workbenches. This will be valuable to create other types of projects. Examples furniture, shelving, storage units.

Teacher Tips

(Use the first person to share a useful idea that helps with implementation and ensures success.

Divide and conquer. Work together. Stay on task. KISS.

Timeline

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What sequence of teaching and learning experiences will equip students to develop and demonstrate PTE standards and the Academic standards?

Day 1: Measure and draw the workbench.

Day 2: Build the part using a 3D printer.