

Integrated Project Based Learning

Measuring – The Basics

This signature project template is based on the 6 A's which are the standard for signature projects:

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

Project

Title of Project	Measuring – The Basics
Project Developed by	T. Cameron, D. Cameron, K. Ferguson
E-mail Address	
School	ARTEC Charter School / Minico High School
Pathway / Small Learning Community / Academy	Diesel Technology / Information Technology / Math
Time Frame	3 Days

Authenticity

Briefly describe your project.

Overview

Students often ask the question, "Why do I need to know how to measure?" This project is designed to show students how they will use mathematical ideas and procedures to communicate, reason, and solve problems in their choice of future careers.

Vocabulary/Key Terms

List vocabulary words and key terms essential to student understanding

Key Terms	Ruler	Caliper
	Inch	Multimeter
	Centimeter	Millimeter
	Meter	Yard
	Furlong	Mile
	Metric	Tape Measure
	Digital Tape Measure	

Time Line

Day 1 – Introduce to students the need for knowing how to properly measure objects or distances in the correlating technical field. Display different tools used for measurement. (ruler, yardstick, tape measure, caliper, multimeter)

Day 2 – Students will measure a variety of objects and write down their findings

Day 3 – Students will take measurements from day 2 and convert to the metric equivalent where applicable.

Day 4

Day 5

Day 6

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 as needed.

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, postsecondary and/or industry partnership works with students on the project?*

Classroom Activities

Measure a variety of objects, distances, and voltages.

Community Activities

Career Activities

Deduct from their findings the importance of proper measurement in their career choice.

Academic / Professional Technical Rigor

Content Standards Use the space below to list the citywide learning standards addressed by the project. (A list of standards is available at <http://www.sde.idaho.gov/ContentStandards/default.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.)

Math

Geometry2.1: Understand measurable attributes of objectives and the units, systems, and processes of measurement.
Geometry2.2: Apply appropriate techniques, tools, and formulas to determine measurements.
Algebra I 1.1: Understand numbers, ways of representing numbers, relationships among numbers and number system.
Algebra I 1.2: Understand meanings of operations and how they relate to one another.
Algebra I 1.3: Compute fluently and make reasonable estimates.
Algebra I 2.2: Apply appropriate techniques, tools, and formulas to determine measurements.
TM1.1: Understand and use numbers.
TM1.2: Understand and perform computations accurately.
TM1.3: Estimate and judge reasonableness of results.
TM2.1: Understand and use U.S. customary and metric measurements.
TM2.2: Apply the concepts of rates, ratios, and proportions.
TM2.4: Apply appropriate techniques, tools, and formulas to determine measurements.
TM3.6: Apply functions to a variety of problems.
PS.1.3.3: Measure and calculate using the metric system. (648.03c)

INT Standards:

STANDARD : *Students will demonstrate knowledge and skills to upgrade basic network software and hardware components.*
Analyze uses of RJ-45 connectors, comparing the contributions of cabling and patch cables to the overall length of the cabling segment.

Diesel Standards:

d. Exhibit the ability to perform basic math functions, including measurement in both U.S. and metric, calculations, conversions, and currency as applicable to program/facility and or project: Measurement tools, Tape measures, Applied math, Add, subtract, and multiply

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

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?

Using an assortment of measuring devices, the student will be able to demonstrate to the instructor the ability to measure different objects and then convert to the metric equivalent.

Traditional form of assessment will be used. (They either got it right or they got it wrong!)

Assessment

Teacher will give positive feedback as the student is performing the given tasks.

Recommended Resources / Sample Products

Software or Materials Needed

(Examples)

Ruler, measuring tape, caliper, multimeter

Teacher-Developed Materials

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

Instructor prepared scenario for presentation.

Student-Developed Materials

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

Websites Used

(Examples)

Final Words

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

Students will get the practice needed to develop the skills needed to properly measure objects and distances for use in their selected technical field.

Teacher Tips

(Use the first person to share a useful idea that helps with implementation and ensures success. Make it chatty, informal.)

Student Goals

Include student personalized goal(s).