Questions = Answers

Asking questions, defining problems, specifying relationships between variables, and clarifying arguments and models… it's what we do in science.

In science, we are charged to **ask** questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available **resources** and, when appropriate, **frame** a hypothesis based on **observations** and scientific **principles**. (MS-PS2-3)

We are tasked with **planning** and carrying out investigations to **answer** questions or **test** solutions to problems in 6–8 builds on K–5 **experiences** and progresses to include investigations that use multiple **variables** and provide **evidence** to support **explanations** or **design** solutions.

We are expected to **plan** an **investigation** individually and **collaboratively**, and in the **design**: **identify** independent and dependent variables and **controls**, what **tools** are needed to do the gathering, how **measurements** will be **recorded**, and how many **data** are needed to support a claim. (MS-PS2-2)

We are challenged to **conduct** an investigation and evaluate the experimental design to **produce** data to serve as the basis for evidence that can meet the **goals** of the **investigation**. (MS-PS2-5)

We **construct** explanations and design solutions to include constructing **explanations** and designing solutions supported by multiple sources of evidence consistent with scientific ideas, **principles**, and **theories**. We apply scientific ideas or principles to design an object, tool, **process** or **system**. (MS-PS2-1)

We engage in **argument** from evidential experiences to constructing a convincing argument that supports or refutes **claims** for either **explanations** or solutions about the natural and **designed world**.

We **construct** and present **oral** and **written** arguments supported by **empirical** evidence and scientific **reasoning** to support or refute an explanation or a model for a **phenomenon** or a solution to a problem. (MS-PS2-4)

STEAM Experiences

3+1 Days of Collaborative Intensive Learning

Join the Buffalo Museum of Science and E1B in an authentic learning experience in which your students explore the correlation between Making, Breaking, and Engineering Design aspects and the inquiring elements of STEAM, critical elements of the New York State P-12 Science Learning Standards, all resulting in student-led presentations at the Buffalo Museum of Science.

Day 1 - You and your students will tour the Buffalo Museum of Science, engaging in hands on exploration of engineering design opportunities.

Day 2 - E1B supports students as they begin researching areas of interest, accessing authentic materials and outside sources, begin and creating technology assets.

Day 3 - E1B supports students as they refine research information, prepare notes, and refine technical projects in anticipation of presenting their projects to parents and special guests.

Day 4 - Showtime! Students present to their invite-only guests at the Buffalo Museum of Science.

*Program cost = $250 per class (up to 30 students)
*Presentation event fee - $8 per parent/guest attending
*Contact Antonio Scordo @ ascordo@e1b.org for details

Junior Docents

An Immersive, Educational Experience Provided by Buffalo Museum of Science and Erie 1 BOCES.

BUFFALO MUSEUM of SCIENCE

erie boces
www.e1b.org

Combine all 21st Century skills to provide your students an authentic, collaborative, and innovative learning experience.

Develop / Predict

Develop and revise models to describe, test, and predict and/ or describe more abstract phenomena and design systems.

(MS-PS1-1),(MS-PS1-4)

Plan / Investigate

Plan an investigation individually and collaboratively, and in the design: identify independent **and** dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.

(MS-PS1-8)

Argue / Evidence

Construct and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.

(MS-PS1-7)

Evaluate / Inform

Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence.

(MS-PS1-3)

Mechanics

Grades Pre-K-2

SIMPLE MACHINES MADE SIMPLE

Students will interact with the many simple machines they come in contact with everyday, and learn to identify the incline planes, gears, levers and pulleys in the inventions that we have come to depend on.

Pre-K Common Core: D1) All D3) 2, 3 D5) All

Grades 3-5

SIMPLE MACHINES

Students will learn to identify some of the balls and ramps, incline planes, gears,screws, levers and pulleys in inventions that we have come to depend on.

MST 1, 4, 5, 6, 7

Engineering

Grades 3-8

ENGINEER IT

An introduction to the field of engineering! Working in pairs, students will design and construct model cars out of simple materials and learn how aerodynamics affects energy efficiency.

ELA 1 / MST 1, 5, 7 / CDOS 1, 2, 3