

Big Project Possibilities at MSI

Project

Develop a facilitated experience that demonstrates one or more of the concepts listed in the content framework. If you are interested in working on a concept related to, but not specifically listed in, the framework, contact Shannon to discuss. Possibilities include but are not limited to: a science demonstration similar to our existing demonstrations, a multimedia presentation, or a theater presentation.

Project Content Framework

- **Chemistry and Physics of Water**
 - The water molecule is simple in structure (2 hydrogen atoms and 1 oxygen atom), but water exhibits some extraordinary properties because of the unique way the atoms are bonded together
 - Water can exist in different states of matter (solid, liquid, gas) and can change state through heating and cooling
 - Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the earth's surface in what is known as the water cycle
- **Motion and Forces**
 - The force acting on an object is related to its mass and acceleration
 - For every action there is an equal and opposite reaction
 - An object in motion that is not being subjected to a force will continue to move in a straight line at a constant speed
 - If more than one force acts on an object the forces will reinforce or cancel one another depending on their directions and magnitudes; unbalanced forces will cause changes in the speed and/or direction of the object
- **Gas, Pressure, and Temperature**
 - Air molecules tend to move from high to low pressure
 - Gas pressure results from the collision of air molecules on the walls of a container
 - Gases occupy the entire volume of the container
 - Pressure exerted by a gas is determined by the number of particles in a given volume and its temperature
- **Gravity and Granular Physics**
 - Earth's gravity pulls an object towards it without touching it
 - Changes in speed or direction of motion are caused by forces
 - Collections of solid grains can behave like fluids when in motion
- **Matter and Non-scale Science**
 - Matter is composed of tiny, constantly moving atoms and molecules you can't see; atoms combine to make molecules
 - Atoms are made of a positive nucleus surrounded by negative electrons
 - Different arrangements of atoms make different types of materials
 - Atoms and molecules can be precisely arranged to make new types of materials with desired properties
- **Energy, Heat, and Combustion**

- Particles of matter are in constant motion, dependent on temperature
- Energy appears in different forms; it cannot be created or destroyed but can change from one form to another
- Some materials conduct heat better than others; heat can be moved from one object to another
- Heat can be produced in many ways including burning, rubbing, or mixing one substance with another
- **Sound** (check out our new Sound demo first)
 - Vibrations in materials set up wavelike disturbances that spread away from the source; these disturbances move at different speeds in different materials
 - Something can be heard when sound waves from a vibrating object enter the ear

Project Venues

- Mobile Demo Stage- averages 20-40 visitors
- Mobile Demo Carts- averages 1-10 visitors
- World Live Theater* - up to 60 visitors
- Science Theater* - up to 66 visitors
- eSuite* - up to 35 visitors

* Has media capabilities

Contact Shannon to discuss the pros and cons of the venues.

Other Challenges

- MSI's general audience includes school groups, families, and adult groups. We typically aim for the middle school content level but we must be able to quickly adjust content and delivery to meet the needs of whoever is in our audience.
- Demonstrations are just one of the many things to do here. Keeping in mind that an average visit lasts only a few hours, we want to aim to keep our demonstrations around 7-15 minutes.
- Visitor safety is really important! As you develop the program, be sure to eliminate potential hazards for the visitor.
- If you have questions, contact Shannon at Shannon.Forsythe@msichicago.org or 773-753-2760.