GLASS·ROOTS

Compression and Tension

Standards addressed: Science -ENGINEERING- Art- Mathematics – History

New Jersey Core Curriculum Content Standards:

5.2 Standard: Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy and motion are powerful conceptual tools for making sense of phenomena in physical living and earth systems science.

Strand: A. Properties of matter: All objects and substances in the natural world are composed of matter. Matter has two fundamental properties: matter takes up space and matter has inertia.

Common Core Curriculum Standards:

CCSS.ELA-Literacy.RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

CCSS.ELA-Literacy.RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

Grade Levels: 6-8, 9-12

Essential Question: What do you observe with compression or tension and glass/ how does compression or tension affect glass?

Activity Overview:
Students will experience the forces of tension and compression by manipulating objects that are strong in each but not in both. Students then take what they have learned and apply it to various glass rods and flat glass sheets in the studios. Ultimately the construction of a Prince Rupert's Drop will be demonstrated. During the lesson, video segments that illustrate the design and construction process using compression and tension in the real world will be available.

Key Concepts: Temperature, Compression, Tension, Mass, Matter, Design, Empirical Reasoning