**Project Brief: Egg Drop**

**It’s all about the tools and the process!**

“Design thinking” skills can be developed while students learn and apply basic concepts about physics and motion. Students should think critically about the forces their egg will experience, how much force it can withstand, and how to create a vessel that will absorb or diminish the forces on the egg. Students begin by formulating and answering some key questions:

* What are the most significant forces that will act upon the egg?
* What materials will your egg drop container be made from?
* What math and equations will inform your egg drop design?
* Where will the force of the fall be directed?
* What features of the design add or reduce air resistance?
* What similar solutions from the real world can be used to inform your design?

**Process**:

For this egg drop project, the first task is to develop basic skills in using Autodesk® 123D Design® software to develop concepts as part of the Design Thinking ideation stage. After completing the sample egg drop protector, students are encouraged to develop their own designs and apply their knowledge of the software and the fundamental physics to generate multiple concepts for alternative designs. The bottom line is this: if students can expand and enhance their ability to combine the innovation capabilities of the software, the power of the design thinking process, and critical thinking skills about engineering and physics, then the goals of this curriculum have been achieved.

**Design considerations used in the example project are as follows**:

* Purpose: Does the egg drop protector achieve the basic goal of allowing the egg to survive a fall?
* Design: What does the egg protector look like? How do the design features function? How is the egg loaded or unloaded?
* Physics: What forces act upon the egg and need to be mitigated by the design?
* Creation and assembly: How will the components be made? How will they be assembled to create the final product?
* Scheduling requirements: 5 to 6 hours