

# DIVE-in Engineering

STEMSCOPES

in partnership with New York Hall of Science



**Deconstruct-Innovate-Vary-Explore:** this is what real-world engineers do every day. Unleash your students' creativity with DIVE-in Engineering, a curriculum where makerspace meets engineering design and being an engineer becomes a reality. Students will build robotic arms, hovercraft, subwoofers, and more, customizing and tweaking their designs along the way as they compete for the optimal design.



## Deconstruct

Working the way engineers do, students begin by taking apart a working prototype. By recording measurements, making diagrams, and taking notes, the students prepare for the next step.



## Imitate

Now students are ready to reverse engineer the prototype, making their own version based on what they learned during the Deconstruct.



## Vary

In the next step, students analyze what they have created and brainstorm ways to make it different. Can they make it bigger? Smaller? Can they replace or remove parts?



## Explore

The knowledge and skills gained by the students in the previous steps have prepared them for the final exploration, in which they solve the original problem in a new way, or apply the solution they have used to a totally new problem.

In each grade band, students will explore nine different engineering solutions, in three different units: On the Move, Around the House, and Eyes, Ears, and Hands.



MOTORBOAT



AIR CONDITIONER



LOCK BOX

COMING  
FALL 2017

DIVE-in Engineering kits contain all the materials needed for 24 students to become creative makerspace engineers. Set up like a store, students will work with a budget to “buy” the kit supplies for their projects, simulating the constraints and demands of real-world engineering design projects. Classrooms can also purchase supplemental toolkits to expand the **Vary** section of DIVE-in and support students in need of extra resources for their designs.

3-5th Grade DIVE-in Engineering Bundle			\$2,125.00
<b>On the Move Kit</b>	Balloon Boat	Rubber Band Car	Stomp Rocket
<b>Around the House Kit</b>	Lock Box	Light Switch	Rotary Fan
<b>Eyes, Ears, and Hands Kit</b>	Claw Hand	Stringed Instrument	Telescope
6-8th Grade DIVE-in Engineering Bundle			\$2,600.00
<b>On the Move Kit</b>	Motor Boat	Motor Car	Hovercraft
<b>Around the House Kit</b>	3-way Switch	Door Knob	Air Conditioner
<b>Eyes, Ears, and Hands Kit</b>	Robot Arm	Slide Projector	Speaker
DIVE-in Engineering Teacher Toolkit			\$245.00



**Robot Arm:** Students design a hydraulic robot arm with an articulating neck and pincer grip. How will they **Vary** their design?