

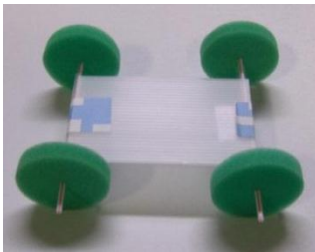
Combine Raft Kits To Create New Challenges

SUMMARY

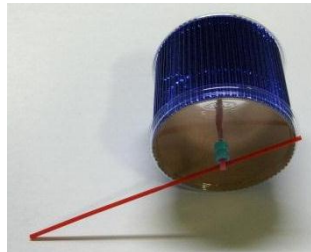
Innovative artists, musicians, software engineers and designers create “mash-ups” by merging several different products into something new. In a similar way, educators can combine RAFT Activity Kits and Idea Sheets to create remarkable opportunities for learning. Asking students “How can you combine these ideas to make something else?” opens the door for ingenuity. A mash-up is a wonderful challenge for students who enjoy tinkering, and a great outlet for students who like to think for themselves.

EXAMPLE

After students build a simple *Car on a Roll* kit and a *Roller Racer* kit, invite them to notice how the two designs are similar and different.



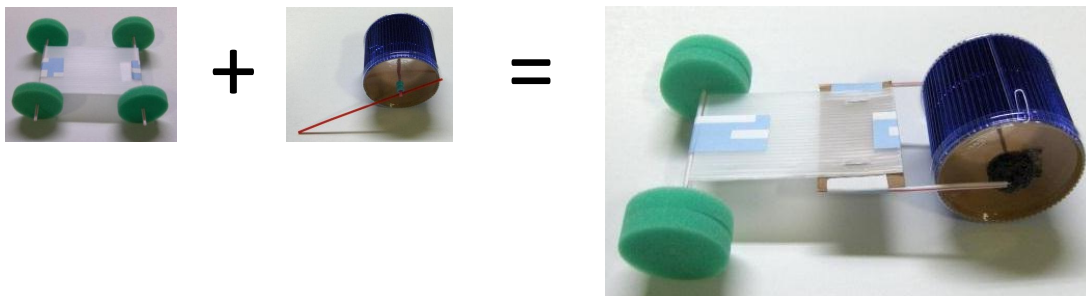
Car on a Roll



Roller Racer

The *Car on a Roll* vehicle moves very easily but has no source of power. The *Roller Racer* has a power source but can't carry a load. Engineers would look at these two designs and say “How can we combine them to get all the advantages in one vehicle?”

One solution is shown below:



Mash-up: *Roller Racer on a Roll!*

Of course, many other solutions are also possible. The students can be given the latitude to include a limited number of new materials in their designs.

OTHER POSSIBLE MASH-UPS



Simple Stethoscope

+



Back in the Groove

=

Play an old record with an ordinary pin and hear every note.



Evolution by Natural Selection

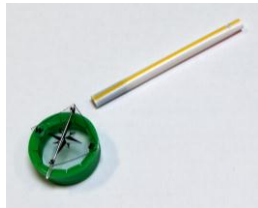
+



Bug Pooter

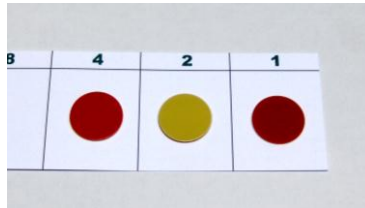
=

Learn about natural selection with a variety of creative bug-catching tools



Mini Magnet Wand & Floating Compass

+



Binary Dots

=

The poles of a magnet can be used to represent binary numbers. Use compass to “read” each value.

GETTING STARTED

At first, students might not see obvious ways to merge two kits together. Do a little brainstorming to help them share ideas. Pose interesting questions. For example, “How do computers store numbers?”, “How does a stethoscope help doctors hear?”, or “What other ways do animals catch food?” Invite students to tinker and to use their resourcefulness. Make this a homework assignment or team project so students have time to experiment with a variety of ideas.

A CHANCE TO SHINE

After the challenge, invite each team to present their ideas or design. If appropriate, have them demonstrate what their gadget does. This is a good chance to add a writing assignment, make a video, or document student learning in other ways.

REFLECTION

Combining two things to make something new is an everyday activity for professional engineers. The best inventions are often creative adaptations of existing products. Invite the students to share what they learned about creative thinking, prototyping, working in teams, and understanding how things work. Encourage them to make interdisciplinary connections between subjects such as math, science, art, culture. Share your ideas with RAFT!