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# Build a Gasper

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## Purpose:

- Students will complete a take-home project that requires inventiveness and creativity to solve a simple problem.

## Objectives:

- Using recycled, renewable or sustainable materials, students will design and build a tool (gasper) that collects fragile organisms safely, so that they can be studied closely.
- Students will test their gaspers then compare and contrast results with their classmates.

## Materials Provided in Kit:

- Sample gaspers (provided)
- Design and assembly sheets (provided)
- Gasper test checklists (provided)

## Materials Not Provided in Kit:

Teachers and/or students must provide most of the materials required for this activity. See the design and assembly sheet for a list of suggested materials.

- Test bugs, made from bits of paper or other lightweight materials

**Time Required:** 2-3 hours of class time, 2-3 hours of homework time over 1-2 weeks

**Appropriate Grade Level:** K-3

**NGSS Standards:**

**K-ESS3-3:** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

**K-2-ETS1-3:** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

**2-PS1-2:** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

**3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**3-5-ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.



## Activity:

<b>Introduction</b>	<ul style="list-style-type: none"><li>• Gaspers are tools that allow students to catch insects safely and hold them in a container inside the classroom, so they can be studied.</li><li>• Gaspers are not meant to collect large insects or insects that bite or sting.</li></ul>
<b>Body</b>	<ul style="list-style-type: none"><li>• Show the students the model gaspers and identify each of its parts and their functions.</li><li>• Identify what each part is made of. Ask students what other materials would work for each part.</li><li>• Hand out and go over design and assembly sheets. Students will build gaspers at home with a parent or guardian.</li><li>• When students bring their completed gaspers to class, hand out test checklists, then facilitate the “Gasper Test” activity.</li><li>• Review checklists together as a class and compare and contrast the results.</li><li>• Ask students what they might use to make any repairs or improvements to their gasper.</li><li>• Assist students in making the repairs.</li><li>• Repeat the Gasper Test.</li><li>• Help students individually if their gasper is not functioning.</li></ul>
<b>Closure</b>	When all students have a working gasper, announce the day and time of the first collection activity where students will use them. See the activity “Insect, or Something Else?”

## Extension:

- Prompt students to draw or write about another invention they would like to create. Use Common Core standards for language arts.

## Modifications:

- Students can complete the project in more than 2 weeks.
- Gasper repairs can be made at home or in the classroom with teacher-supplied materials.
- The Gasper Test can be repeated at home or at school.
- In class, students can work with buddies from higher grade levels.

