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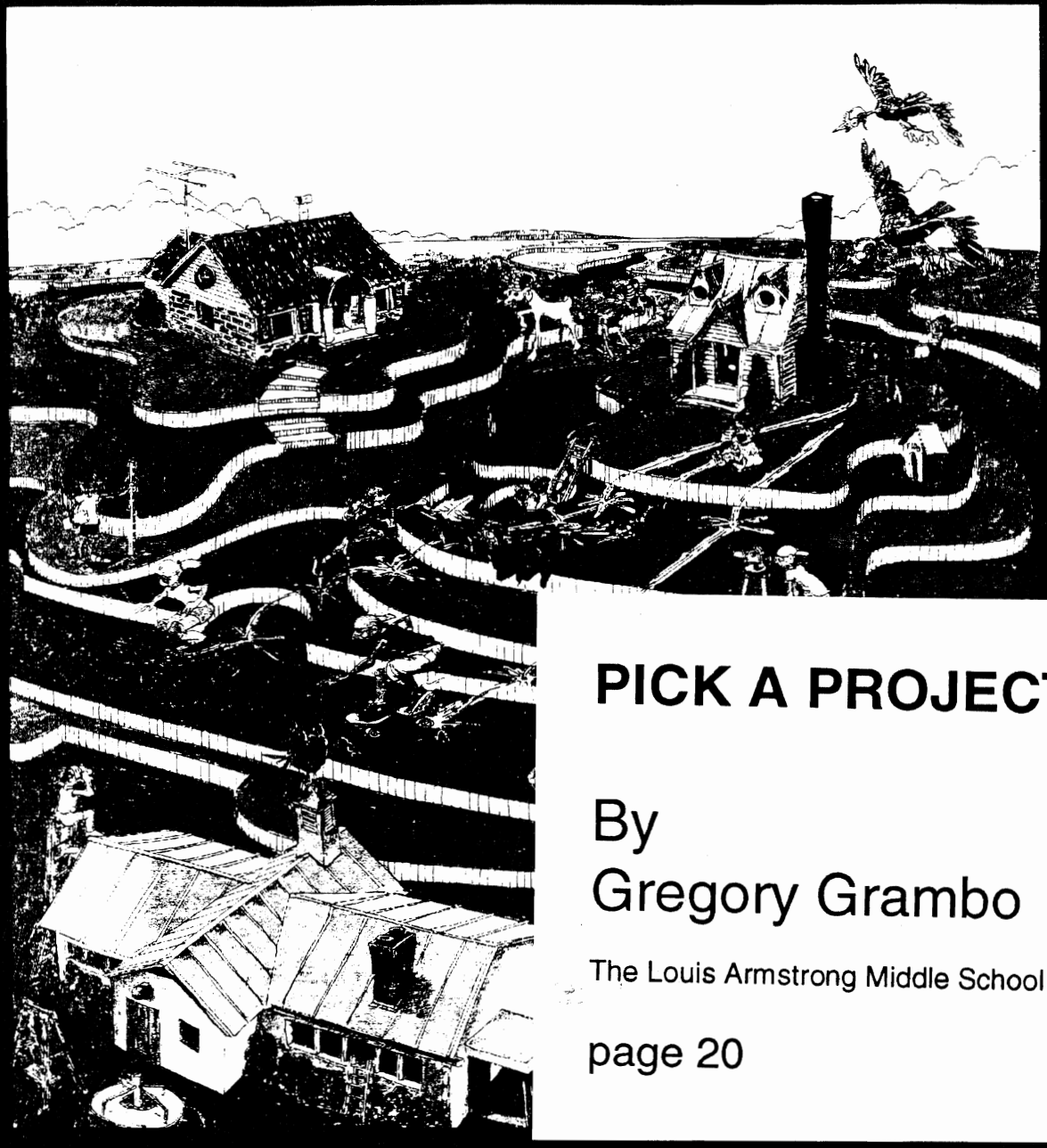
SCIENCE Scope



PICK A PROJECT

By
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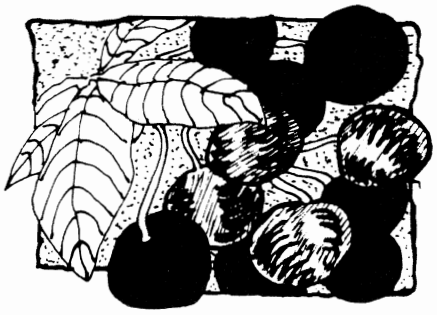
How High is Your House? • Maps for More Meaningful Learning • Join the S.ave O.ur S.ources Team • Sea Turtles and Strategies for Language Skills

Potpourri

Find out about fruity litmus paper, science projects, a handy heating source, and a pedestrian activity.

Natural indicators



Most middle school science teachers are familiar with cabbage juice as a natural indicator for acids and bases. I have found that many other natural indicators can be explored in the science classroom.

Red/blue litmus paper is a common chemical paper indicator for acids and bases. Students can make their own indicator paper by soaking strips of coffee filter in various fruit juices. Berries such as cherries, blueberries, strawberries, and raspberries work very well. The procedure for preparing indicator paper is as follows:

1) Boil about eight to ten berries in just enough water to cover them for about ten minutes;

2) Soak small strips of coffee filter in the juice until saturated;

3) Air-dry the strips completely.

You can do most of the work beforehand or else have students do the work. When the strips are ready to be used, have students use them to test various kitchen liquids, such as vinegar, dishwashing liquid, tea, and so forth, for their acidity/basicity. The paper strips should be pink in acids and blue-green in bases.

Students enjoy trying to make other natural paper indicators. The petals of any brightly colored flowers (such as geraniums, roses, or carnations) will also work as indicators.

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Pick a project

Now that the new year has arrived, resolve to involve your class in more hands-on activities, or better yet, hands-on activities students choose for themselves. Announce to the class that everyone is to work, either alone or in pairs, on a project of their own choosing.

First, get students thinking about project ideas. Ask them to think of a particular aspect of science, either introduced in class or that they know about from experience, and would like to learn more about. Emphasize to students that project ideas should be narrow enough to complete within three weeks. For instance, students could experiment by growing plants in different types of soil, study a toy that demonstrates a physical property, or write reports about creatures that live in a nearby pond. Also explain to students what comprises a project. A project must consist of more than one format. One format is the activity itself, and another format can be a form of media, including posters, models, videotapes, and so forth. Completed projects will be presented to the entire class.

After explaining how to select project ideas, have students decide whether they want to work alone or with a partner. Students choosing to work with partners should have each partner's parent(s) sign a note agreeing to drive their child to the project partner's home when it's necessary for them to work together. Also, set limits on the amount of money students are permitted to spend to be fair to students from lower-income families.

As the three-week period nears an end, randomly assign days on which students bring in, demonstrate, and discuss their projects with the class. Allocate five to six project presentations per 45-minute class period. At the beginning of each class, while students are setting up their projects, perhaps involve the rest of the class in a discussion on current science events. When the first presenter, or pair of presenters, is ready, move the class to the project table. The pair or individual presents the project and then the class asks questions.

Afterwards, students grade the project. Tell students to include with the grade a brief description of the project as well as a list of reasons for giving the grade assigned. To assign the final grade for a project, average all the students' grades so that you can factor the class' grade in with your own. With this combination of class–teacher grading, students are able to obtain feedback on projects from their classmates as well as the teacher. This enables students to develop a fuller understanding of what makes a "good" project. Feedback from fellow students, in turn, helps students know what to look for when evaluating other students' projects.

After everyone has presented a project, you can choose the best projects (on the basis of uniqueness, use of the scientific method, and thoroughness) for your school's next science fair.

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