Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching

Classroom Compass

Summer 1996 • Volume 2, Number 3

HIGHLIGHTS

Design in the Classroom

Students in Ms. Clark's fifth-grade science class are busy. Their desks are clustered in several work areas and a few of the students are sitting on the floor, intently piecing together parts of cereal boxes and wooden ice cream sticks. One student is making a rough sketch on the chalkboard. An assigned problem is defined on a chart:

Grandmother can't open her pill bottle. She lives alone. She needs her medicine every four hours. How can she get the medicine she needs?

Another chart presents a short challenge statement or "design brief":

Design and make a device that will help Grandmother regularly receive her medicine.

Listen in as Ms. Clark visits with several teams. The first group is testing different construction materials and finishing a sketch of a proposed solution.

"At first we set up the design with a pill dispenser knob, but then we were thinking if Grandmother can't open a little pill bottle, how could she turn a knob?" a student is saying. "We need something that is easier to open—maybe we should try a lever or a pull string."

"Your device looks promising," says the teacher, looking at the sketch. "What are your ideas for materials and connections?"

"We tried gluing pieces of plastic," says Karen, "and that didn't work."

"What happened when you glued it?" inquires the teacher.

"Roberto had to hold the pieces together, and the glue dripped out when he squeezed it."

"What did you do then?" Ms. Clark probes.

"We decided to use brads to clip them together."

"Did that work?"

"We're still working on that part ..."

In another group three girls have a different solution. Made from a large cereal box and a spring-loaded delivery chute, their device connects to a timer and a switch that holds a trap

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Design in the Classroom, *continued*

door shut. Pills, loaded in the top, will rattle down the delivery chute at timed intervals. The students clamor to demonstrate for the teacher:

"Look! Look! It almost works!"

Design: Constructive Thought and Action

Design in the science and mathematics classroom challenges students to apply their learning. Faced with a defined problem, students must use productive and critical thinking, analysis, decision making, and evaluation skills to produce tangible solutions. Design challenges can draw from a variety of disciplines and require a variety of responses. In some situations, students plan and build a product; sometimes, they analyze the solutions of others. Some classes take their ideas beyond the classroom and put them to work outside the classroom.

Science in schools should focus on discoveries children can make through inquiry; the best science educators permit a rich variety of these discoveries to co-exist and do not force the students to converge upon only one idea. Design is the technological parallel to inquiry. It offers students experience in planning and making models of useful things and introduces them to laws of nature through their understanding of how objects and systems work. It pursues solutions to problems: how to design an efficient boat hull, how to get across a river, or how to open a pill bottle with arthritic hands. Going back to the drawing board runs through the design process; troubleshooting and modifying plans, designing and building different models, and relying on teamwork strategies are integral to the spirit of the design classroom.

Science, mathematics, and technology are entwined in modern life. Practical manifestations of science and mathematics touch our lives many times each day. Integration of the disciplines, including aspects of social and historical concern, reflect the reality of our culture and the world our students will soon join as adults. Design assignments can pull together threads from many disciplines, certainly science and mathematics, but also social studies, language arts, and fine arts. The interactive cooperation required for successful group problem solving provides a practice ground for experiences in the adult workplace.

Design technology, a national curriculum in the United Kingdom, harkens back to the "practical arts" of American classrooms in the 1930s and 1940s. Once common in our schools, skills such as using tools and making decisions on craft materials became less important than academic pursuits in the 1950s and were eventually reserved for secondary students on vocational tracks. Today those boundaries seem less clear: vocational classes are being phased out. Courses in robotics and other applied technologies are targeted for all students. Teachers in elementary grades are finding that the basics of design are an exciting addition to their young students' curriculum. Science and mathematics teachers at all levels can use design projects to pose problems and encourage constructive thinking about solutions.

Problems are Everywhere

Teachers report that finding problems is a difficult step for students, but many problems can be identified in everyday living. Examples such as life's persistent hassles (travel time to work is increasingly slow because of traffic snarls), children's literature (the pigs' houses couldn't stand the wolf's huffing and puffing), and opportunities to improve our quality of life (fast food containers are filling up the landfill) provide opportunities for discussion and design solutions.

Some practice in brainstorming ideas and then suggestions that can be translated into an invention can help students build their skills in problem finding. Encourage them to jot down things that are nuisances. Here are a few: When an ice cube tray

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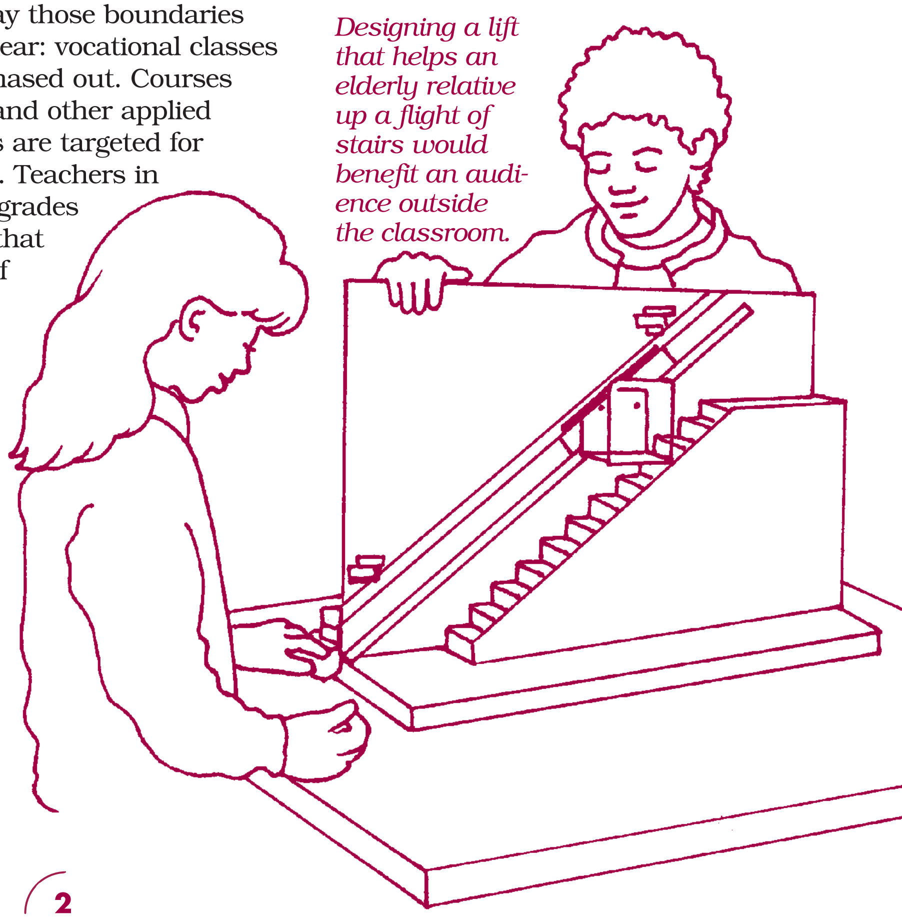

Designing a lift that helps an elderly relative up a flight of stairs would benefit an audience outside the classroom.

DESIGN

Stages in the Design Process

Design is a creative process that occurs in many settings. The steps outlined below offer a structured format for a formal design process based on models from industry.

Analyze the situation

Before beginning the design, sort out what problem you are trying to address.

Write a brief

Write a short statement giving the general outline of the problem to be solved.

Research the problem

Sometimes a problem can be solved "straight out of your head," but in most cases you will need to gain some new information and knowledge.

Write a specification

This detailed description of the problem spells out what the design must achieve and what limitations will affect the final solution.

Work out possible solutions

Combine your ideas with information obtained from your research to suggest several possible design solutions. Sketch several possibilities on paper.

Select a preferred solution

Decide which solution to develop. Although the chosen solution should, ideally, be the one that best satisfies the specifications, other constraints such as time, cost, or skills may limit the decision.

Prepare working drawings and plan ahead

Draw the chosen design including all the details that are important to its construction.

Construct a prototype

Make the product. In industry a model is usually built first and the final product is developed from it, but in most classrooms, the model is the final product.

Test and evaluate the design

Testing is ongoing as the construction progresses, but a final test of the entire system or model proves if the project does the job for which it is designed. Look back at the specifications and check the requirements carefully. Ask such questions as: How well does the design function? Does the design look good? Is the product safe to use? Were suitable materials used? How could I have improved on my design?

Write a report

The report provides evidence of your work in analysis, planning, designing, carrying out the practical work, evaluating, and communicating.

Adapted from Garrett, J. (1991). *Design and Technology*. Reprinted with permission of Cambridge University Press.

Science and Technology

Excerpts from the *National Science Education Standards*

Developing Student Abilities and Understanding

Grades K–4

In grades K–4, children should have a variety of educational experiences that involve science and technology, sometimes in the same activity and other times separately. When the activities are informal and open, such as building a balance and comparing the weight of objects on it, it is difficult to separate inquiry from technological design. At other times, the distinction might be clear to adults but not to children.

Children's abilities in technological problem solving can be developed by firsthand experience in tackling technological tasks. They also can study technological products and systems in their world. Children can engage in projects that are appropriately challenging for their developmental level. They can study existing products to determine function and try to identify problems solved, materials used, and how well a product does what it is supposed to do. An old technological device, such as an apple peeler, can be used as a mystery object for students to investigate and figure out what it does, how it helps people, and what problems it might solve and cause. Such activities provide excellent opportunities to direct attention to specific technology—the tools and instruments used in science.

Suitable tasks for children at this age should have clearly defined purposes and be related with other content standards. Tasks should be conducted within immediately familiar contexts of the home and school. They should be straightforward; there should be only one or two well-defined ways to solve the problem, and there should be a single, well-defined criterion for success. Any construction of objects should require developmentally appropriate manipulative skills used in elementary school and should not require time-consuming preparations and assembly.

Over the course of grades K–4, student investigations and design problems should incorporate more than one material and several contexts in science and technology.

Experiences should be complemented by study of familiar and simple objects through which students can develop observation and analysis skills. By comparing one or two obvious properties, such as cost and strength of two types of adhesive tape, for example, students can develop the abilities to judge a product's cost against its ability to solve a problem. During the K–4 years, an appropriate balance of products could come from the categories of clothing, food, and common domestic and school hardware.

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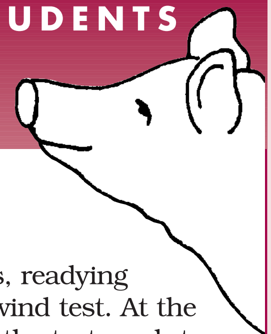
A DESIGN EXPLORATION FOR LOWER LEVEL STUDENTS

The Three Little Pigs



Early elementary students gain experience with construction techniques for strength and stability.

This activity uses a well-known children's story to introduce elementary students to some basics of structural support. Begin with a reading of "The Three Little Pigs" and a discussion of how the pigs constructed their houses. Have the students examine the structures like braces and trusses (triangles connected together) that support the tables and chairs in the classroom. You may want to let the students explore the world outside, looking at structures supporting, containing, and sheltering people and their belongings. A walking trip down the street reveals houses and transportation structures like bridges and walkways. The playground has structures to look at and the school building itself is supported by braces and pipes that may be hidden.

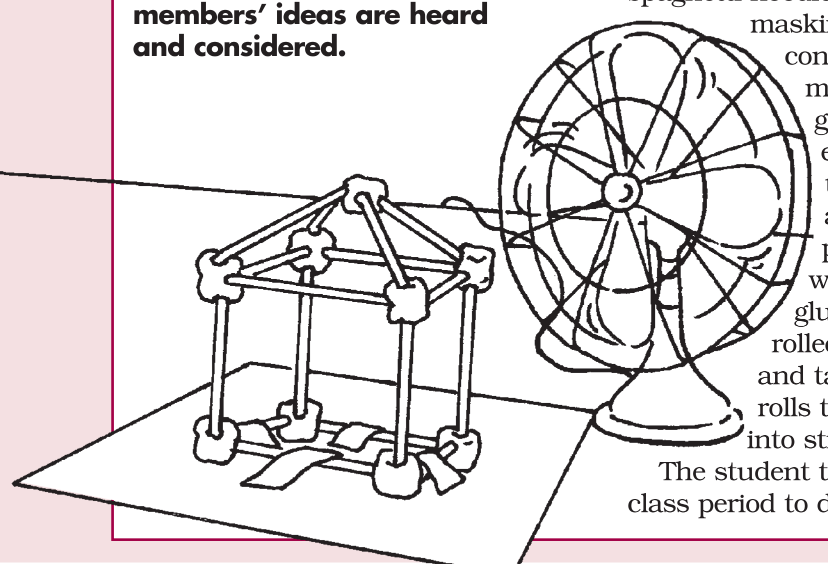
Encourage a variety of designs and building techniques in the children's structures. Design provides opportunities for experimentation.

Cooperative teamwork is essential to ensure all team members' ideas are heard and considered.

The Challenge: Design and make a shelter for three pigs that the wolf can not blow down.

Student teams may pick from three options for the shelter's main structural support: toothpicks, straws, or rolled paper. The builders may use only 16 total of whatever construction material they choose. Each house must be no taller than 15 cm (6″) and must fit into the "footprint," a 15 cm x 15 cm (6″ x 6″) square marked on the table. Each house must stand for three minutes when placed 7.5 cm (3″) in front of a fan.

One of the major challenges in this activity is ensuring that the structures are well enough anchored to the tabletop to withstand the fan's force. Provide a variety of construction and connecting materials to bolster the structures and secure their foundations. Possible materials are: glue sticks, staple gun, paper clips, marshmallows or gumdrops, spaghetti noodles, soaked whole dry peas, brads, and tape. Here are some methods that can work: straws attached with paper clips; spaghetti noodles attached with masking tape; toothpicks connected with marshmallows, gumdrops, or softened beans (let them dry overnight after poking toothpicks in them); wood sticks and glue; and paper rolled around pencils and taped, with the rolls taped together into structures.



The student teams will need a class period to design and build the structures, readying them for the wind test. At the completion of the test, each team should discuss its house and the reasons it stood or fell when the fan blew on it.

Data Collection

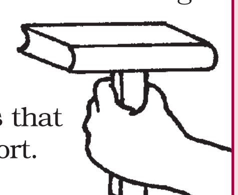
Use a large sheet of chart paper with columns headed MATERIAL, CONNECTOR, and RATING. Student teams fill out the data and rate the materials based on their building experience.

MATERIAL	CONNECTOR	RATING
Rolled paper	glue	fair
Rolled paper	tape	good
Toothpick	marshmallow	poor

Exploration

The students' houses have been tested by a force from the side, but many structures must withstand force from above. What structures are strong enough to bear weight?

Give pairs of students a piece of copy paper and a 15cm (6″) piece of tape. Let them try to shape the paper so a book can be placed on it at least 20 cm (8″) above the table. A column of paper will hold a balanced book. Continue to load books on the column until it collapses and let the students mark areas of weakness and strength in their design. This evidence of "buckling" helps illustrate stress points and areas that need more support.



This activity is adapted from: Fowler, M. *Beginning Lessons in Engineering Design: The DTEACh Classroom Lessons.* Austin, TX: Bar-None Publishing, 1994.

A DESIGN EXPLORATION FOR UPPER LEVEL STUDENTS

Power Boat Design

New initiatives in design and technology can influence school staff collaboration. This activity, Power Boat Design, is excerpted from a unit presented in Technology Science Mathematics (TSM) Connection Activities, *a curriculum of integrated design projects for grades 6 and up, published by Glencoe/McGraw Hill.*

This design project brings together science, mathematics, and technology, allowing in-depth exploration of design principles and the underlying mathematics and science that support them. Science units on buoyancy, Newton's Laws of Motion, and Archimedes' Principle are relevant to the boat's design and function. In mathematics, students need an understanding of surface area, volume, and symmetry as well as skills in graphing to complete the design, construction, and testing of their boats. Student designers also learn about energy conversion, boat hull design, drag, tools, and materials. The variety of options—materials, hull shapes, propulsion systems—assures that a selection of different boats will emerge from the design process.

Designing a Power Boat

Middle or high school students are challenged to design a self-propelled toy boat. They must choose boat materials, determine hull shape and a propulsion system, build the model, and conduct a variety of tests and measures to design an efficient craft. The following activity, one component of the design process, tests the boat's hull for efficiency and buoyancy.

The Test

The students will float their boats in a 2 m (6.5′)-long trough filled with water to 1 cm (1/2 in) from the top. A plastic roof gutter, sealed to hold water, works well for this test. A pulley attached to one end of the gutter is threaded with a length of string weighted with a 150 g (5.25 oz) block. The string attaches to a boat's hull (see illustration below) and the weight drags the boat through the water. A start and finish line mark the distance for timing and a stopwatch records the speed. A photogate sensor provides a more technical option for recording the speeds.*

Presenting the Problem

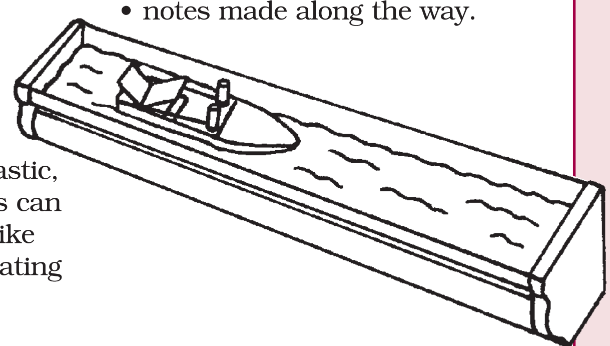
Design constraints for constructing the boat:

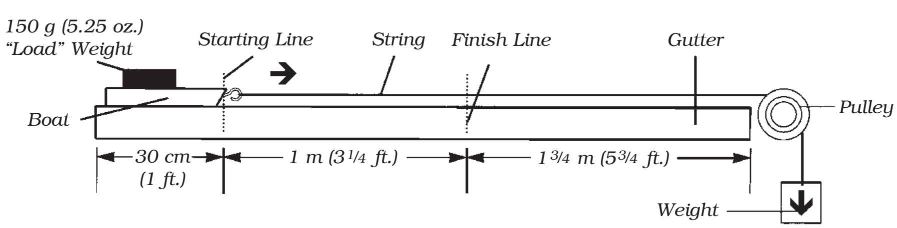
- A variety of materials may be used, including wood, plastic, or metal. Styrofoam™ blocks can be used. Porous materials, like wood sheet stock, need a coating to reduce water absorption. Coatings can make the hull smoother, reducing friction, and increasing performance.
- The boat can be no bigger that 8 cm (3.1″) wide and 23 cm (9″) long.
- The boat can have no pointed, sharp, or loose parts that might injure children.

The Design Portfolio

Require the design teams to document their work in a portfolio with the following materials:

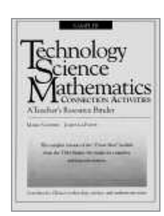
- information gathered from resources;
- drawings of all possible hull designs, providing views from the side, top, and bottom;
- tables, charts, or graphs showing how the boat performed;
- illustrations or descriptions of the science and mathematics principles used to design the boat;
- all technology, science, and mathematics work completed during the activity;
- notes made along the way.





*A photogate sensor is not essential to this activity. For further information about this tool, see page 8.

The complete 48-page Power Boat activity (ISBN: 0-02-636952-4) is available from Glencoe/McGraw Hill for \$3.21 plus postage and handling. The complete binder (ISBN: 0-02-636947-8) with six activities is available for \$61.98 plus postage and handling. For information call 1-800-334-7344.



Science and Technology

Excerpts from the National Science Education Standards

Developing Student Abilities and Understanding *Grades 5–8*

In the middle school years, students' work with scientific investigations can be complemented by activities in which the purpose is to meet a human need, solve a human problem, or develop a product rather than to explore ideas about the natural world. The tasks chosen should involve the use of science concepts already familiar to students or should motivate them to learn new concepts needed to use or understand the technology. Students should also, through the experience of trying to meet a need in the best possible way, begin to appreciate that technological design and problem solving involve many other factors besides the scientific issues.

Suitable design tasks for students at these grades should be well-defined, so that the purposes of the tasks are not confusing. Tasks should be based on contexts that are immediately familiar in the homes, school, and community of the students. The activities should be straightforward with only a few well-defined ways to solve the problems involved. The criteria for success and the constraints for design should be limited. Only one or two science ideas should be involved in any particular task. Any construction involved should be readily accomplished by the students and should not involve lengthy learning of new physical skills or time-consuming preparation and assembly operations.

Note that while the principles of design for grades 5–8 do not change from grades K–4, the complexity of the problems addressed and the extended ways the principles are applied do change.

Developing Student Abilities and Understanding *Grades 9–12*

Although these are science education standards, the relationship between science and technology is so close that any presentation of science without developing an understanding of technology would portray an inaccurate picture of science. Learning experiences associated with this standard should include examples of technological achievement in which science has played a part and examples where technological advances contributed directly to scientific progress. With regard to the connection between science and technology, students as well as many adults and teachers of science indicate a belief that science influences technology. This belief is captured by the common and only partially accurate definition "technology is applied science." Few students understand that technology influences science. Unraveling these misconceptions of science and technology and developing accurate concepts of the role, place, limits, possibilities, and relationships of science and technology is the challenge of this standard.

The choice of design tasks and related learning activities is an important and difficult part of addressing this standard. In choosing technological learning activities, teachers of science will have to bear in mind some important issues. For example, whether to involve students in a full or partial design problem, or whether to engage them in meeting a need through technology or in studying the technological work of others. Another issue is how to select a task that brings out the various ways in which science and technology interact, providing a basis for reflection on the nature of technology while learning the science concepts involved.

In grades 9–12, design tasks should explore a range of contexts including both those immediately familiar in the homes, school, and community of the students and those from wider regional, national, or global contexts. Successful completion of design problems requires that the students meet criteria while addressing conflicting constraints.

Over the high school years, the tasks should cover a range of needs, of materials, and of different aspects of science. For example, a suitable design problem could include assembling electronic components to control a sequence of operations or analyzing the features of different athletic shoes to see the criteria and constraints imposed by the sport, human anatomy, and materials. Some tasks should involve science ideas drawn from more than one field of science. These can be complex, for example, a machine that incorporates both mechanical and electrical control systems.

Although some experiences in science and technology will emphasize solving problems and meeting needs by focusing on products, experience also should include problems about system design, cost, risk, benefit, and very importantly, tradeoffs.

Resources and Opportunities

One way to find out more about design education in your state is to talk to the state education agency person in charge of technology education. These contacts can tell you about statewide initiatives, links with national efforts in technology education, and what might be going on in your local area.

Hervey R. Galloway
Arkansas Department of Education
Three Capitol Mall
Little Rock, AR 72201-1083
1-501-682-1271

Jerry O'Shee
Louisiana State Department of Education
PO Box 94064/Room 300
Baton Rouge, LA 70804-9064
1-504-342-1499

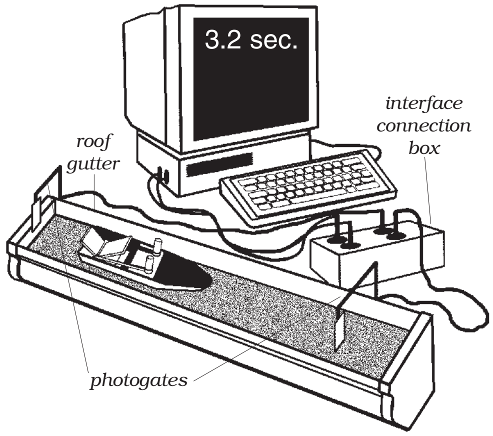
Karen Christopherson
New Mexico Department of Education
300 Don Gaspar
Santa Fe, NM 87501-2786
1-505-827-6662

Lynn Hawkins
Technology Education
1500 West Seventh Ave.
Stillwater, OK 74074-4364
1-405-743-5478

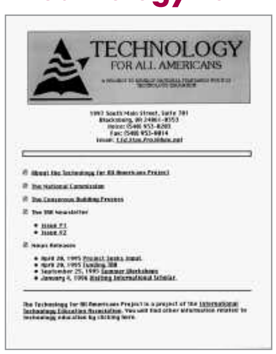
Richard Grimsley
Texas Education Agency
1701 N. Congress Ave.
Austin, TX 78701-1494
1-512-463-9688

Photogate Sensor

A *Photogate Sensor* can be connected to a computer or a CBL (computer-based laboratory). The sensor system consists of an infrared light-emitting diode (LED) and an infrared light sensor. When an object passes between the light source and the sensor, the sensor sends a signal to the computer. For the power boat activity on page 6, set one photogate at the starting point and a second photogate at the finish point. The computer will record the elapsed time and display it on the monitor. The boats must be equipped with a flag that will block the beam of light when the boat passes through the photogate. Photogates are available in kits or ready-made and range in price from a $23 kit to $75 assembled. Versions are adaptable to IBM, Apple II, and Macintosh computers; additional interface software will be needed. Available from:
Vernier Software
2920 S.W. 89th Street
Portland, OR 97225
1-503-297-5317



Technology for All Americans



The National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA) have funded the *Technology for All Americans* (TAA) project to develop national standards for K–12 education. Presently in Phase I, TAA is grappling with questions concerning the long-term vision for technology education and a clear definition of the intellectual domain it encompasses. Phase II will develop curriculum content standards for grades K–4, 5–8, and 9–12. All aspects of technology will be included in the standards as well as relationships with such allied disciplines as science, mathematics, and engineering.
For more information:
Technology for All Americans 1997
South Main Street
Suite 701
Blacksburg, VA 24061-0353
1-540-953-0203
Their Web address is
scholar.lib.vt.edu/TAA/TAA.html

International Technology Education Association

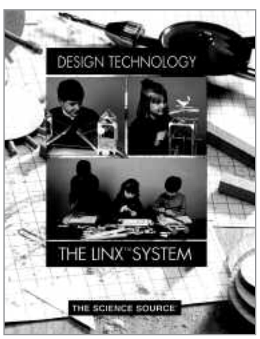
The International Technology Education Association works on behalf of technology teachers, supervisors, administrators, and university personnel. Its purpose is to enhance technology education through experiences in schools, grades K–12. ITEA publishes *The Technology Teacher* and the *Journal of Technical Education*, as well as a variety of other publications and videos providing teaching directions, instructional ideas, and networking opportunities. For further information, contact:
ITEA's national office
1914 Association Drive
Reston, VA 22091
or check out their Web page at
www.tmn.com/Organizations/Iris/ITEA.html
1-703-860-2100

Ties: The Magazine of Design and Technology Education

For teachers of grades 6–12, *Ties: The Magazine of Design and Technology Education* offers a look at technology and design as a field of study in U.S. schools. *Ties* is a

nonprofit publication of Trenton State College, which offers an undergraduate degree program in technology education. The magazine is published six times a year and is free to teachers. It generally presents feature articles by teachers about their experiences. For more information write:
Ties Magazine
103 Armstrong Hall
Trenton State College
Hillwood Lakes CN 4700
Trenton, NJ 08650-4700
1-609-771-3333.
Or check out their Web page at
www.trenton.edu/~teched/ties.html

The Science Source



For a selection of kits, instructional activities, books, and tools that support design technology in the classroom, contact *The Science Source* and request a catalog of their materials. The library references available from this distributor include excellent publications from Great Britain that may be difficult to track down at your local bookstore. The Science Source also distributes the LINX™ System, a set of building/construction materials and the Collins Primary Technology series.
Address:
The Science Source
PO Box 727
Waldoboro, ME 04572
1-800-299-5469

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is emptied, one or two cubes often fall on the floor; feet can get too hot in the bottom of sleeping bags; too many drinking glasses may be used during the day; a dog's hair can get all over the chairs she rubs against. Can you think of inventions that could help solve these problems?

Literature can be a source for problems and inspire thinking about solutions and designs. "Three Billy Goats Gruff" is a good example. The goats want to cross the bridge, but a goat-eating troll always awakens and threatens them. How can we solve this problem? Perhaps the goats are too noisy crossing the wooden bridge. Is there another way to get across? Or a way to silence their hooves?

Social concerns can be another focus for design problem solving. For example, designing a lift that helps an elderly relative up a flight of stairs would benefit an audience outside the classroom. Rethinking the fabrication of toys to reduce use of raw materials or suggesting alternative routes to get to school are examples of design projects that could benefit the audience within the classroom. Critical thinking, imagination, and responsible action combine to produce rewarding and relevant classroom experiences.

Designing Solutions—from Kindergarten to High School

As children begin their school careers, they can tackle problems that are appropriate for their developmental level—for example, have young children think about and design new ways to fasten their coats or move through the room. They can also study technological products common to their world—zippers, bridges, or coat hooks. As they advance in the elementary years, problems and investigations should include more than one material and several contexts in science and technology. Students might make a device to shade eyes from the sun, compare two types of string to see which is best for lifting different objects, explore how small potted plants can be made to grow as quickly as possible, make yogurt and discuss how it is made, or design a simple system to hold two objects together. It is important to include design problems that require application of ideas, use of communications, and implementation of procedures—for instance, improving hall traffic at lunch or cleaning the classroom after scientific investigations.

During the middle school years, the design tasks can cover a range of needs, use a variety of materials, and draw on various aspects of science. Suitable experiences include making electrical circuits for a warning device, designing a meal to meet nutritional guidelines, choosing a material that combines strength with insulation, or designing a system to move dishes in a restaurant or in a production line.

Such work can be complemented by the study of technology in the everyday world. Investigating simple, familiar objects helps students develop powers of observation and analysis—for example, middle school students can compare the characteristics of competing consumer products, including cost, convenience, and durability. Regardless of the product studied, students need to understand the science behind it. Choose a variety of products including clothing, food, structures, and simple mechanical and electrical devices. Also include problems that are not concerned with products to help students understand that technological solutions include the design of systems (for example, traffic control design or recycling

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Design in the Classroom,
continued from page 9

solutions) and can involve communication, ideas, and rules.

At the high school level, students can participate in major design projects that deepen their understanding of technology and provide a richer sense of the links between technology, mathematics, and science. Students may perceive science as positive (as in "scientific progress") and technology as negative ("technological problems"). They may not be clear about the roles, limits, and relationships between technology and other disciplines. For example, technology can create a demand for new scientific knowledge. The availability of new technology often sparks scientific advances as scientists extend their research or try entirely new lines of inquiry.

High school projects should include familiar examples from the home, school, or community as well as problems from wider contexts—the nation, the world. Social and economic forces strongly influence which technologies will be developed and used and many factors, such as personal values, consumer acceptance, or the availability of risk capital, influence what and how products will be developed. At this level, students can examine ideas of risk analysis and technology assessment. Designed systems are often subject to failure but the risk of failure can be reduced by a variety of means: more research ahead of time, more controls, or fail-safe designs. The designer must balance a variety of issues including cost considerations, safety factors, and consumer acceptance with possible failures to determine the viability of developing the product.

Across all grade levels, design can be a purposeful, creative, and practical process of giving form to ideas. It fosters exploration and the application of relevant information to achieve something of value, and it can spark excitement and enthusiasm among students.

S C I M A S T

Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching

Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching

The Eisenhower SCIMAST project supports science and mathematics education in five states with a combination of training, technical assistance, networking, and information resources. Eisenhower SCIMAST is funded by the U.S. Department of Education's National Eisenhower Program to serve educators in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Eisenhower SCIMAST works in partnership with the Eisenhower National Clearinghouse, a national resource center dedicated to increasing the availability and the quality of information about instructional resources for science and mathematics educators. As part of that effort, Eisenhower SCIMAST has a resource/demonstration center open to visitors Monday through Friday, 8:00 A.M. to 5:00 P.M. The center houses a multimedia collection of science and mathematics instructional materials for grades K–12. It is located on the fourth floor of the Southwest Educational Development Laboratory, 211 East Seventh Street, Austin, Texas 78701. The center also has a toll-free number, **1-800-201-7435**, that provides callers in the five-state region information on multimedia and print instructional materials, assessment tools, and successful strategies for mathematics and science instruction.

Eisenhower SCIMAST Staff:

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Maria Torres, senior training associate
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