

RESOURCES

Help for Teachers

Making Connections with Literature

Using literature as a supplement and enhancement for instruction is good teaching practice because:

- Children learn from everything they experience.
- Children learn more effectively when instruction is associated with positive emotions, such as those evoked by a good book.
- Literacy is key to children's success as learners.
- There are many different learning styles.

We encourage you to incorporate books of all kinds into your work with *Designed Environments: Places, Practices, and Plans*. We've included an annotated list of quality books of all kinds on the following pages. They include storybooks that demonstrate the benefits of organizing and designing the environments we occupy and use—places and spaces as well as ways of

doing things; and nonfiction books on the many facets of environmental design—human-made and nature-made—that play a role in our daily lives. But don't stop with these. You know your students and how they learn better than anyone else. When you see a book that might further your instructional goals, interest or challenge a particular student, or evoke feelings that make learning more fun, add it to the books that are available to your students.

Designed Environments: Places, Practices, and Plans

Amber Brown Wants Extra Credit, by Paula Danziger. G.P. Putnam: New York, 1996. (Recommended grades: 3-6)

This Amber Brown adventure finds the funny, spunky girl dealing with some unexpected changes. Her room is a mess, her homework is late, and her schoolwork is suffering. Amber needs to get organized at home and in school.

And So They Build, by Bert Kitchen. Candlewick Press: Cambridge, MA, 1995. (Recommended grades: PreK-3)

Students explore the extraordinary world of animal behavior with descriptions of 12 astonishing animal architects and explanations of why and how they build their marvelous structures. Color illustrations show animals and insects as they work building their structures.

Ant Cities, by Arthur Dorros. HarperCollins Children's Books: New York, 1988. (Recommended grades: K-3)

This "Let's-Read-and-Find-Out-Science" book examines the harvester ant and introduces ant communities. Includes information on the organization of the ant community, and some of the physical characteristics of different types of ants.

Arthur, Clean Your Room! by Marc Brown. Random House: New York, 1999. (Recommended grades: PreK-3)

When Arthur's mother orders him to get rid of the old junk cluttering his room, Arthur decides to have a garage sale. Things do not work out exactly as he had planned.

Be a Perfect Person in Just Three Days, by Stephen Manes. Bantam Doubleday Dell Books: New York, 1983.

(Recommended grades: 3-6)

Milo, tired of problems with his sister, parents, and classmates, finds a book in the library that promises to make him a perfect person in just three days. Is it possible?

Being Bullied, by Kate Petty. Barron's Educational Series: New York, 1991. (Recommended grades: PreK-2)

Rita is bullied by another girl at school, but finds relief when she stands up to her. Analyzing and redesigning the environment eliminated the problem.

The Berenstain Bears and the Messy Room, by Stan and Jan Berenstain. Random House: New York, 1983.

(Recommended grades: PreK-3)

The entire Bear family becomes involved in an attempt to clean and organize the cub's messy room.

The Best School Year Ever, by Barbara Robinson. HarperCollins: New York, 1997. (Recommended grades: 3-6)

The six horrible Herdmans, the worst kids in the history of the world, cause mayhem throughout the school year until a school project called "Compliments for Classmates" changes things.

The Big Box, by Toni Morrison. Hyperion Books: New York, 1999. (Recommended grades: 3-6)

Because they do not abide by the rules written by the adults around them, three children are judged unable to handle their freedom, and they are forced to live in a box with three locks on the door.

The Big Idea, Vol. 1, by Ellen Schecter. Hyperion Books: New York, 1996. (Recommended grades: 3-6)

Eight-year-old Luz is determined to transform a vacant run-down lot into a garden like the one her grandmother had in Puerto Rico. She must now convince her reluctant neighbors to help. Cooperation and environmental design are the key to her success.

The Boxcar Children (The Boxcar Children Series #1), by Gertrude Chandler Warner. Albert Whitman: Morton Grove, IL, 1989. (Recommended grades: 2-6)

The story of four orphans, Henry, Jessie, Violet, and Benny, who set out to find a safe place to live. They find an abandoned boxcar near a dump and make a home in the boxcar using junk they find in the dump. Against all odds, they do make it into a home.

The Chalk Box Kid, by Clyde Robert Bulla. Random House: New York, 1987. (Recommended grades: 2-6)

A new neighborhood in the poorer part of town, a smaller house because Gregory's father has lost his job, a new school, and an unhappy birthday. Gregory discovers an abandoned chalk factory behind his house and creates a fantastic chalk garden on the charred walls. As his garden grows and flourishes, something magical happens. A very different garden and a quiet friendship spring up within its walls.

Charlie and the Chocolate Factory, by Roald Dahl. Penguin Putnam Books: New York, 1998. (Recommended grades: 3-6+)

A magical tour where the selfish and undeserving are nastily punished and the good are sumptuously rewarded. Each of five children lucky enough to discover an entry ticket into Mr. Willy Wonka's mysterious chocolate factory takes advantage of the situation in his own way, but only Charlie Bucket follows the rules.

City: A Story of Roman Planning and Construction, by David Macaulay. Houghton Mifflin Co.: Boston, 1983. (Recommended grades: 4-6+ and Teacher Resource)

Text, and black and white illustrations show how the Romans planned, mapped out, and constructed their cities.

City Green, by Dyanne DiSalvo-Ryan. William Morrow & Co.: New York, 1994. (Recommended grades: K-4)

Marcy and Miss Rosa start a campaign to clean up a garbage-filled empty lot and turn it into a community garden. The last page gives steps to follow in creating a community or classroom garden.

Class Clown, by Johanna Hurwitz. Scholastic, Inc.: New York, 1988. (Recommended grades: 3-6)

Lucas is one of the smartest kids in third grade, but he's always in trouble. When he tries to change his ways, the most unexpected things happen.

Clean Your Room, Harvey Moon! by Pat Cummings. Simon & Schuster Children's Books: New York, 1994. (Recommended grades: K-2)

Harvey Moon's room is a mess! No cartoons until his room is absolutely spotless. Just when he thinks he's finally done, he discovers that his idea of clean is not the same as his mother's!

Designed Environments: Places, Practices, and Plans

Cleversticks, by Bernard Ashley. Crown Publishing Group: New York, 1995. (Recommended grades: PreK-2)

Illustrates classroom organization in a tale of cultural integration. Ling Sung dreads going to school. There are too many things the other kids can do that he can't. Then he discovers that everyone admires his prowess using chopsticks.

David Goes to School, by David Shannon. Scholastic, Inc.: New York, 1999. (Recommended grades: K-3)

In his very traditional school, David is expected to follow all of the rules. But, David's activities include chewing gum, talking out of turn, engaging in a food fight, and drawing on his desk. In a punishment that fits the infraction, David redeems himself and is rewarded with praise.

Evan's Corner, by Elizabeth Starr Hill. Penguin Putnam Books: New York, 1992. (Recommended grades: PreK-3)

Evan's family lives in a crowded apartment too small for privacy, but Evan's mother lets him choose his own special corner. Evan maps out the room, picks a corner by the window, and fills the space with a milk crate table, a drawing, and even a pet turtle.

Franklin Is Messy, by Paulette Bourgeois. Scholastic, Inc.: New York, 1994. (Recommended grades: K-3)

Franklin learns it's easier to find toys when his room is neat and organized.

Fritz and the Mess Fairy, by Rosemary Wells. Dial Books: New York, 1996. (Recommended grades: PreK-3)

Fritz has a terrible problem keeping things neat. One evening when his science project goes wrong, the Mess Fairy appears. How can he get this genie back in the bottle?

Games from Long Ago, by Bobbie Kalman. Crabtree Publishing Company: New York, 1995. (Recommended grades: 3-6)

An entertaining look at the board games, parlor games, and other games that children played in the nineteenth century, including the rules, procedures, and play.

Geography Wizardry, by Margaret Elizabeth Kenda. Barron's Educational Series: Hauppauge, NY, 1997.

(Recommended grades: 3-6+)

Introduces the world of maps and mapmaking and environmental design. Contains over 150 fun projects, maps, and experiments for junior explorers.

George Shrinks, by William Joyce. HarperCollins: New York, 1987. (Recommended grades: K-2)

George wakes up one morning to find he's shrunk during the night. With a new pint-size perspective of his environment, mundane chores become more exciting.

A House Is a House for Me, by Mary Ann Hoberman. Penguin Putnam Books: New York, 1982.

(Recommended grades: PreK-3)

A lively rhyme about houses introduces all types of homes for both people and animals.

If You Sailed on the Mayflower in 1620, by Ann McGovern. Scholastic, Inc.: New York, 1992. (Recommended Grades 2-6)

Shows how the Pilgrims worked together and created rules to help them survive on the Mayflower and once they had arrived in a new land.

I Like Mess, by Marcia Leonard. Millbrook Press: Brookfield, CT: 1998. (Recommended grades: PreK-2)

Messy Tess cleans up her room to please Mom and Dad, and then begins her messy cycle again.

It's Mine, by Leo Lionni Alfred A. Knopf : New York, 1996. (Recommended grades: K-2)

Three selfish frogs quarrel over who owns their pond and island until a storm makes them value the benefit of sharing.

John Patrick Norman McHennessy—The Boy Who Was Always Late, by John Burningham. Crown Publishers: New York, 1987. (Recommended grades: K-3)

Every day, John Patrick Norman McHennessy sets off along the road to learn, and every day strange and improbable happenings make him late. His teacher never believes his stories. One day he is able to make it on time and finds an unlikely and strange thing has happened to his teacher.

Jumanji, by Chris Van Allsburg. Houghton Mifflin: Boston, 1981. (Recommended grades: K-3)

When a bored brother and sister are left on the own one afternoon, they find more excitement than they bargained for in a mystical and mysterious jungle adventure board game that they find under a tree. The rules are firm: once started, the game must be played to the finish.

Just a Mess, by Mercer Mayer. Golden Books: New York, 1987. (Recommended grades: PreK- 2)

Little Critter is forced to clean up his room in order to find his lost baseball mitt.

The Man Who Didn't Wash His Dishes, by Phyllis Krasilovsky. Doubleday: Garden City, 1950. (Recommended grades: 1-4)

There was a little man who kept house all alone. He liked to cook and eat but he didn't like to wash his dishes, so he stopped. The accumulating dirty dishes became a very big problem, but the man found a solution to these difficulties.

Manners, by Aliko. Greenwillow Books: New York, 1997. (Recommended grades: K-4)

Examples of how good and bad manners affect a child's environment and how good manners make good sense.

Messy Bessy's School Desk, by Patricia and Frederick McKissack, Children's Press: New York, 1998. (Recommended grades: K-3)

When Messy Bessy starts to clean up her desk at school, she assesses the condition of the desk, and cleans out the useless things. She then inspires the rest of the class to straighten their desks, as well as clean up the entire room.

Miss Nelson Is Missing, by Harry Allard. Houghton Mifflin Company: Boston, 1985. (Recommended grades: K-3)

The unruly kids in Room 207 take advantage of their teacher's good nature until she disappears and they are faced with a substitute, the horrid Miss Swamp. Some well behaved children start longing for Miss Nelson's return.

Designed Environments: Places, Practices, and Plans

More or Less a Mess, by Sheila Keenan and Marilyn Burns. Scholastic, Inc.: New York, 1997. (Recommended grades: K-3)

Humorous, rhyming story that follows the adventure of a little girl who must clean up her room, from the pants on the dresser to the shirts on the lamp to the wet sock in the fish bowl.

Pigsty, by Mark Teague. Scholastic, Inc.: New York, 1994. (Recommended grades: PreK-2)

Wendell Fultz's room isn't a mess; it's a total pigsty. When the pigs move in, Wendell comes to appreciate order.

Recycle: A Handbook for Kids, by Gail Gibbons. Little, Brown & Company: Boston, 1996. (Recommended grades: K-3)

Explains the process of recycling from start to finish, focusing on the path of five different types of garbage—paper, glass, aluminum can, plastic, and polystyrene—and describing what happens to each of them when they are recycled into new products.

School Days, by B.G. Hennessy. Penguin Books: New York, 1992. (Recommended grades: K-2)

Pictures and simple rhyming text, written in someone's best printing on school penmanship paper, show how a classroom is organized.

The Secret Life of the Underwear Champ, by Betty Miles. Random House: New York, 1981. (Recommended grades: 4-6)

To be discovered by an ad agency looking for the perfect kid for a TV commercial is a dream come true for Larry Pryor until he discovers that the ad shooting will conflict with baseball practices and that the TV commercial is for underwear.

Stay in Line, by Teddy Slater. Scholastic: New York, 1996. (Recommended grades: K-3)

Combines simple math concepts in an easy to read story about twelve kids and their trip to the zoo. Structure and organization are combined with hands-on math activities.

The Terrible Thing That Happened at Our House, by Marge Blaine. Four Winds Press: New York, 1975.

(Recommended grades: K-4)

A family works together to organize themselves to solve a problem, when the mother returns to work as a science teacher.

Where Does the Garbage Go? by Paul Showers. HarperCollins Children's Books: New York, 1993. (Recommended grades: K-4)

This book follows the garbage truck to the landfill to see how trash keeps piling up, to the incinerator to see how trash can be turned into energy, and then to the recycling center to see how a soda bottle can be turned into a flowerpot.

Assessment

Nearly everyone agrees about the importance of assessment, but what exactly is it, and why is it so significant in education? In a very broad sense, education is like a very large design problem and assessment is the method of evaluating the design. However, education has many objectives, not just one, so assessment also includes a complex process of deciding what to assess and how. Another major complication is that many different kinds of people have a stake in the outcome of the educational process. Parents want to know how much their children are learning and how they can best help them. Politicians worry about the backlash from voters if the educational system appears to be “failing,” however that term is defined. Administrators fear that they will be held accountable for low test scores in their schools.

Teachers, who have the most sustained and direct involvement of any adults in the educational process, are constantly looking for ways of knowing how well and how much their students are learning. This data can come from both formal and informal assessment methods, and may be either qualitative or quantitative. At the same time, teachers are often held accountable to

conflicting requirements that are difficult or impossible to meet. For example, the goal of providing a supportive and welcoming learning environment may be in conflict with the regimentation imposed by administrative requirements. Another common concern of teachers is that high-stakes testing will require them to “teach to the test” rather than to support student learning.

Regardless of demands from outside the classroom, a teacher’s primary responsibility is to engage students in exploring and understanding the subject matter. Assessment includes any method of finding out how much of this exploring and understanding actually happens. Information gained through assessment is the only factual basis for knowing what students are learning, how to motivate learning more effectively, how and whether to redesign the curriculum, how to tailor it to the needs of individual students, and how and when to involve parents in the process. Assessment is far too extensive and important to be narrowly defined by standardized test results or to be determined by people outside the classroom.

Here are some basic conclusions that follow from this view of assessment:

- Assessment should be based on clear educational goals.
- Many different kinds of information should be collected as part of assessment. Some of the most important assessment data is totally unexpected.
- Assessment should not be divorced from curriculum; every learning activity should also provide information for assessment.
- Whenever possible, students should become involved in assessing their own learning—for example, by evaluating their own designs or predictions.
- Assessment should examine not only what students have learned, but also the opportunities provided by the curriculum and the learning environment.

Educational Goals

In order to assess the learning outcomes of an activity, it is necessary to know what the educational goals were. However, the purpose of a curriculum unit may not be so clear-cut. Any worthwhile educational activity probably has more than one goal. Also, a teacher's goals may (and often do) change as the activity progresses, or there may be unintended outcomes that are far more significant than the original goals.

When Tonia Bailey planned the outcomes for “Hook Mania,” she was thinking in terms of children gathering and representing data, then designing solutions to a problem and evaluating them. She hadn't thought of this as an opportunity to evaluate children's grasp of the concept of a controlled experiment. As the children discussed which solution to select, it became clear that they didn't understand the need to implement only one solution at a time, then to see if that solution worked. They would have implemented multiple solutions, then not known which one was the effective one. Tonia easily added one more goal to those for this project, and helped children better understand the notion of a controlled experiment.

Rigid adherence to an initial set of goals assumes that the educational process is entirely predictable, which is not the case. Every teacher has both short- and long-term goals for her students, and it is difficult to know in advance when something will happen to advance the long-term goals unexpectedly. As one teacher put it during a discussion on assessment, “You can talk about goals all you want, but what I really care about is that they feel good about themselves and about what they are able to accomplish.”

Information from a Variety of Sources

If educational goals are complex and multifaceted, so are the means of assessing to what extent these goals are met. The narrowest view of assessment, most popular in political circles, confines it to standardized tests. A somewhat broader view expands assessment to include all kinds of paper-and-pencil instruments designed specifically for assessment, such as worksheets, homework assignments, tests, and quizzes.

Our view of assessment is broader still. In the course of an activity, nearly anything students do generates

information that is valuable for assessment. When students talk about their ideas, they provide useful data about the learning process. This was evident in the confusion of Tonia Bailey's students in the above example.

Curriculum as a Major Source of Assessment Data

In order to maximize the amount of information available, the curriculum itself must be seen as a rich source of assessment data. As children discuss their ideas and carry out projects, they reveal their strengths and weaknesses more clearly than they do through more formal assessment devices.

When Mary Flores' class reviewed the “Peek-a-Boo I'm Watching You” worksheet, she discovered her children did not know what it meant to “collect and record data.” The ensuing discussion helped clarify the differences among collecting, recording, and portraying data. When Tonia Bailey's children prepared reports of their study of “Chairs Up and Chairs Down,” she saw the extent to which they could use their math skills in communicating their ideas. Virtually any activity associated with a curriculum unit can

provide insights to children's command of knowledge and skills. Brainstorming sessions, scavenger hunts, design activities, presentations to the class, journals, and discussions within a work group are all potential sources of assessment information.

Students Assess Their Own Learning

Should the audience for assessment data include students themselves? Obviously, students need to know how well they are doing, so they can gauge their own efforts and develop realistic goals for their own learning. However, traditional assessment is usually presented to students in an adversarial manner, in the form of test grades and report cards that frequently undermine rather than enhance their motivation for learning. In traditional forms of assessment, students are always evaluated by adults rather than by themselves, and the outcomes of assessment often have high stakes. Both of these factors contribute to the view of assessment as an antagonistic process. How can students gain access to candid data about their own learning without interpreting it as somehow the produce of bad intentions?

A way out of this dilemma is suggested by some of the activities in Chapter 4. Technological analysis and design activities often provide occasions for self-assessment, where students evaluate their own work against an objective standard, rather than one arbitrarily set by adults. As part of their design of games, Minerva Rivera's class developed instructions for their new games. They evaluated one another's instructions by whether they could follow them. Tonia Bailey's class discussed each group's solutions to the problem of cricket drowning. As a group they were able to evaluate the solutions and select the best one.

Part of the attraction of teaching is that much of what happens in the classroom is unpredictable, and some of the surprises are pleasant or even thrilling! Consequently, it is impossible to decide in advance what all of the methods of assessment will be. Often, serendipity provides ways of assessing students' learning that nobody could have anticipated. After Felice Piggott's class completed a major classroom mapping project, they wanted to continue with an even larger project that would extend beyond their classroom. When children want to continue and expand upon prior work, it is an evaluation of the extent to which that work is internalized and valued.

Assessing the Learning Environment

Like anybody else who designs or plans anything, most teachers engage in informal assessment of their work on an ongoing basis. They ask themselves, "Is it working?" This question is really one of self-assessment: "What is the quality of the learning opportunities I have provided for my students?"

Some of this self-assessment by teachers is based on student learning outcomes of the many kinds described above. At the same time, teachers also assess learning opportunities on the basis of their own perceptions and experiences. Several examples of these self-assessments appear in the teachers' stories in Chapter 4. Tonia Bailey captures the essence of these when she writes of her children solving the "Cricket Suicide" problem: "The children chose to place a piece of driftwood in the tank. Through the discussion I was able to tell that the children understood the process. Because this was not our first environmental analysis and design project, they created a format, and I merely served as the facilitator." Here is testimony to teaching that has empowered children.

The Institutional Context

Every school is different. Each one offers both resources that can be helpful in implementing a new curriculum, and barriers that can make it difficult. It is useful to analyze both carefully, with an eye to mobilizing and extending the resources and overcoming the barriers. In this section, we will look at how some teachers have gained crucial support from school staff, parents, other teachers, and administrators as they developed new programs in science and technology.

The Custodian

The custodian is a key person in the success of any new program, particularly one such as *Designed Environments*, which may take students outside of the classroom and into the rest of the building. The custodian is probably more familiar with the physical layout of the building than anyone else. He or she also has the best access to discarded materials, such as cardboard, waste paper, or wood, that can be very useful. A cooperative custodian can also offer suggestions about additional storage space, and can insure that projects in process will not be thrown out.

The custodian's involvement can also lead to exciting surprises, as the following story illustrates. A second-grade teacher and her class were studying the water supply system of a school in the South Bronx, New York City. They began with the water fountain just outside their classroom. The children were convinced that the water for the fountain was stored in the wall just behind it. Then somebody noticed that there were pipes leading to the fountain. They followed the pipes along the ceiling and realized that they came from someplace else in the building. At this point they went to another floor and noticed a similar pattern of pipes. Eventually, their investigation led them to the basement. There they met the custodian, who gave them copies of the blueprints (maps) of the building, and showed them how the water came into the building. The following day, he gave them an opportunity to turn on the boiler, so they could see how the hot water was heated! The outcome of this investigation was a working 3D model of the building's water supply, in which the pipes were represented by straws and the reservoir by a basin held above the highest floor.

Parents

Parents can also be critical to the success of a curriculum project. A number of teachers have involved parents in investigations of the community around the school. One ESL teacher in East Harlem, New York City, whose students were recent immigrants from various parts of Latin America, engaged her students in a study of the casitas in the community. A casita (literally, "little house") is a small building constructed by community residents on a vacant lot, which may serve as a club house or a religious shrine, or which may be used to house livestock. Several parents who were very familiar with the community accompanied the class on their field visits and facilitated their discussions with the users of the casitas.

How does a teacher get parents involved in the first place? Some teachers have organized parent/child workshops, after school or on Saturdays, as a way to inform parents of what their children are doing and to solicit their support. One strategy that has worked is to have a parent/child workshop a few weeks after children have begun a project. In the workshop, parents and their children are encouraged to pursue a

hands-on project that is similar to what the children have already been doing in school. Because the children have already started the project, they will often take the lead in explaining the material and offer their parents advice on how to proceed. At the same time, parents will provide their own experiences and expertise, and some may become excited enough to volunteer additional support. Parent volunteers can provide the additional adult presence needed for taking the class outside the building.

Other Teachers

Just as children often require peer interaction to pursue a project, so peer support can be essential for teachers too. Another teacher can be a springboard for ideas, a source of advice on overcoming difficulties, and a friend to turn to when everything seems to go wrong. There are many models for teacher/teacher collaboration, each of which can work in some circumstances. Ultimately, the collaborators have to figure out for themselves what works best for them. Here are some examples of ways in which teachers in the same school have worked together:

An experienced teacher gave workshops in the school, in which she engaged other teachers in some of the same activities she had been doing in her classroom. Several of the other teachers became interested and sought advice on pursuing these activities in their own classrooms.

An experienced special education teacher mentored a less experienced special ed teacher, offering her assistance in some of the same projects she had done in her own classroom.

A science cluster teacher met with a classroom group during a “prep” period twice a week. She enlisted the students’ classroom teacher in pursuing some of the same projects as part of their regular classroom work.

A fifth grade teacher and a kindergarten teacher decided to work together. After the fifth-graders had pursued some of their own investigations, several of them became the facilitators in helping the kindergarten children do similar studies. The work involved cataloging and mapping what they found in nearby empty lots. Besides a collaboration among teachers, this project was also a collaboration between older and younger children.

Collaboration among teachers may be actively discouraged by the culture of the school. Even in the best circumstances, collaborations can be difficult to sustain. Just as every school is different, so is every classroom. Ideas and strategies that work in one classroom may or may not be directly transferable to another, and it is important to remain sensitive to differences in chemistry and culture from one room to the next. The most important ingredient in a collaboration among teachers is the commitment to work and learn together, regardless of the outcome of any particular project or idea.

School Administration

A major component of a teacher’s setting is the culture of the school administration. A principal, assistant principal, or other supervisor can make or break an innovative curriculum project. Some teachers are fortunate enough to find themselves in environments that nurture innovation; others are not so lucky. For better or worse, the tone set by the administration is a major factor that every teacher

has to deal with. Even without initial support, however, there are a number of strategies for bringing a skeptical (or even a hostile) administrator on board. Here are some methods that have worked.

One teacher, who was a participant in an in-service inquiry science program, had a roomful of upper-elementary students engaged in long-term science investigations, largely of their own design. She decided to encourage them to enter their projects in the school science fair. She immediately ran into the opposition of her principal, who insisted that all of the material on the display boards be “professionally done.” The teacher knew that her students were invested in their projects, and perfectly capable of creating their own displays, but unable to type the material or produce fancy graphics. To make the displays for them would be to undermine all of their efforts and enthusiasm. So she presented the

situation to her children, without any suggestion about what they ought to do about it.

The next time the principal visited their classroom, the students let him know that they wanted to enter the science fair, and they believed they could make display boards which would be perfectly readable. In any case, they would be around to explain anything the judges didn’t understand. With the teacher standing by silently, the principal reluctantly gave in. At the fair, it became clear that these were the students who had the best grasp of their own projects, although there were others that had nicer-looking boards. Neither the children nor the teacher were surprised when they won first, second, and third prizes, and went on to the District fair! Equally important, the teacher felt that this was a turning point in her relationship with the principal. Afterwards, he interfered much less with her efforts at innovation.

It is far more effective to mobilize children, parents, other teachers, and staff than to confront an administrator directly. He or she will have a much harder time saying no to children, parents, or a group of teachers than to an individual. Also, successful programs speak for themselves. Outside authorities, such as science fair judges, funding sources, or important visitors, can make even the most reluctant principal sit up and take notice. Most important, innovation succeeds best when innovators lay the seeds quietly over time, and exploit opportunities to overcome resistance.

Resist the temptation to take on every adversary, every time. Focus instead on the resources that are available to you, and learn how to mobilize them effectively. Wait for opportunities to let your efforts speak for themselves.