

ART *to* ZOO

TEACHING WITH THE POWER OF OBJECTS

Smithsonian Institution

March/April 1995

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Lesson Plan

Take-Home
Page in
English/Spanish

Subjects

Social Studies

Language Arts

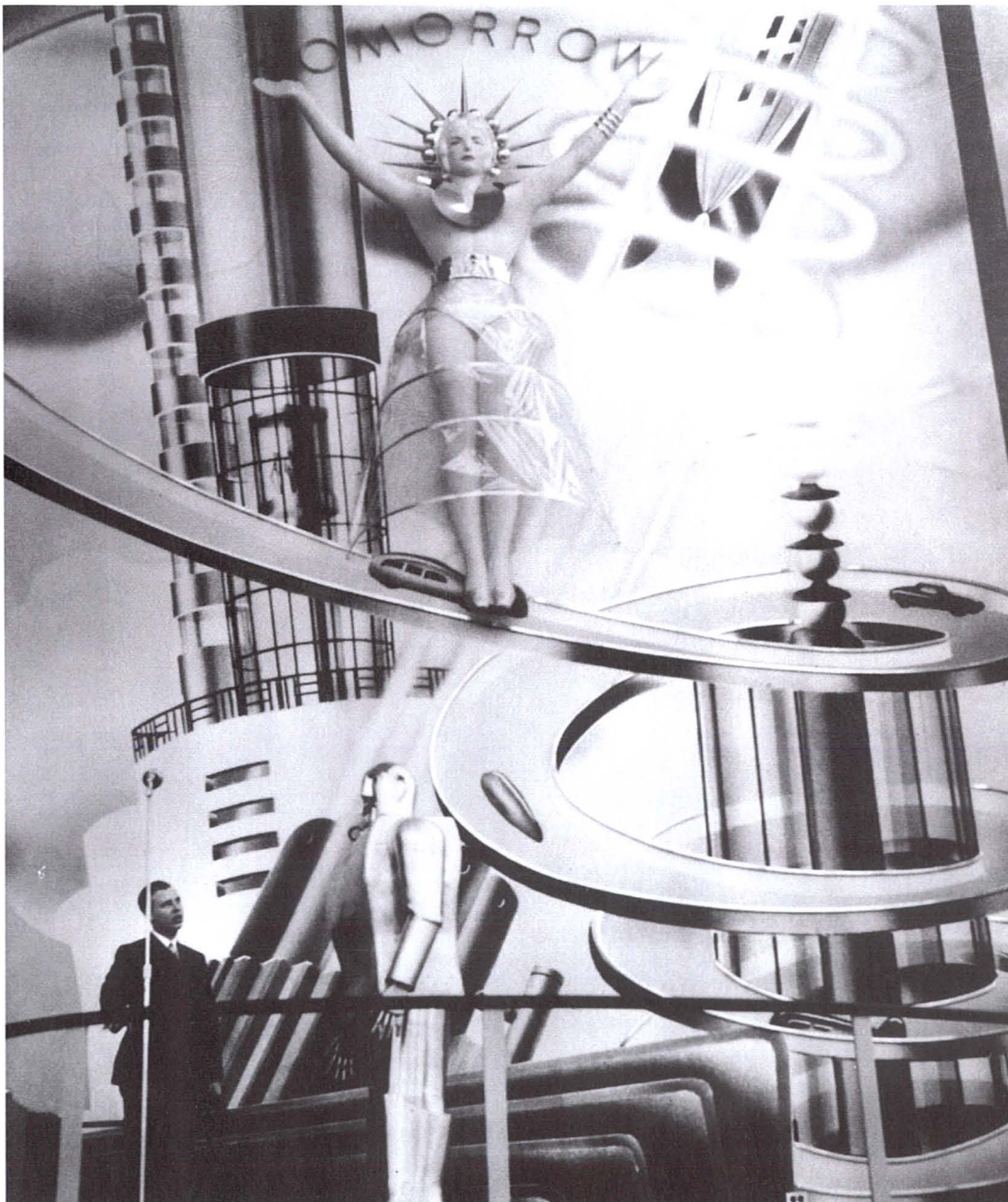
Art

Science

Grades

4–8

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Visions of the Future: Technology and American Society

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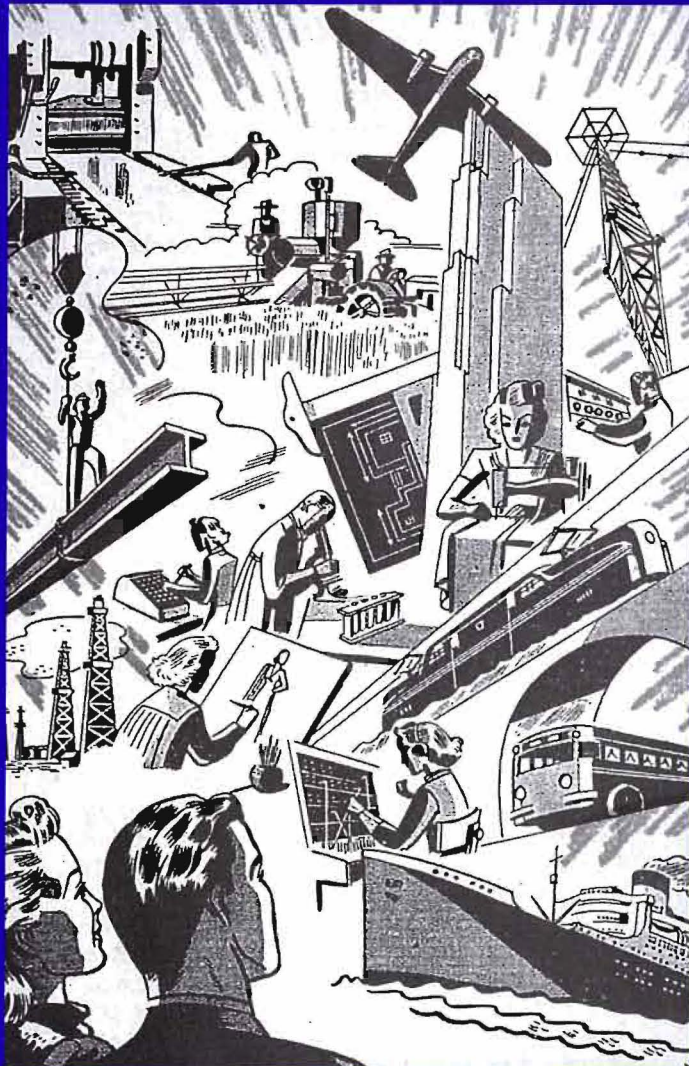
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Art to Zoo's purpose is to help teachers bring into their classrooms the educational power of museums and other community resources.

Art to Zoo draws on the Smithsonian's hundreds of exhibitions and programs—from art, history, and science to aviation and folklife—to create classroom-ready materials for grades four through eight.

Each of the four annual issues explores a single topic through an interdisciplinary, multicultural approach.

The Smithsonian invites teachers to duplicate Art to Zoo materials for educational use.

VISIONS OF THE FUTURE: Technology and American Society

Imagine a place where you'd have to wait months or years to see a TV show or movie that you missed. A place where there were only three TV programs on at a time, with no music channel. In this place you couldn't listen to your favorite music wherever you wanted. Instead, you'd have to listen to your music at home. If you were in a car, you'd have to listen to whatever happened to be on your car radio.

The music wouldn't sound very good either. It would be scratchy and tinny sounding and sometimes would repeat when you didn't want it to.

To get a fast meal in this place, you'd have to go to a restaurant. Any meal made at home would take you at least thirty minutes or more to prepare. Many things would take longer here. To send a message to a friend and get a reply might take over a week. If it were raining and you couldn't go outside, the only games you might have would be card games or board games. Would you want to live in this place? A lot of people you know have—this was the world of just a generation ago! What happened? How did people's lives change so much? The answer, in part, lies in understanding how science has influenced American society during the twentieth century. Science-based technologies and their impact on the lives of everyday Americans are the focus of this issue of *Art to Zoo* and one of the many fascinating

issues explored in *Science in American Life*, a thought-provoking permanent exhibition at the Smithsonian's National Museum of American History. Like the exhibition, we've tried to incorporate activities that will encourage your students to think about the profound influence science-based technologies had on American society during the middle decades of the twentieth century.

THE "WORLD OF TOMORROW"

Through economic depression, total war, and postwar prosperity, many Americans viewed science as a positive force for change and the promise of a brighter future. The public interest in science was fueled in part by the generally positive portrayal of science and scientists in the national media. No individual better personified the public view of science than Albert Einstein, the German-born physicist (and

architect of the theory of relativity) who had immigrated to the United States to escape Nazi tyranny. Young people, especially boys, were encouraged to follow Einstein's example and pursue careers in science. Parents who hoped to stimulate these vocational interests eagerly purchased crystal radio kits and chemistry sets that were billed as "science toys."

This popular fascination with science was exhibited on a grand scale at the World's Fair in New York City between 1939 and 1940. Subtitled "The World of Tomorrow," the fair was held at a time when the future appeared particularly bleak for many Americans. While the worst of the Great Depression appeared to be over, the booming prosperity of the 1920s had not returned. The vision of a spectacular future made possible by present science and invention captivated Americans still wincing from a decade of economic devastation. It was a vision

shared by the fair's commercial exhibitors—leading American industrial corporations like General Motors, Westinghouse, and General Electric.

The thousands of people who passed by the fair's futuristic trylon and perisphere structures were dazzled by a host of science-based technologies. Television was publicly demonstrated on a grand scale. Astonished visitors who appeared on the tiny glowing screens were awarded cards acknowledging that they had been "televised." Everywhere, science-based materials like nylon and plastics were touted as the materials of the future that would vastly improve the lives of everyday Americans. Nowhere was the vision of a better future through technology more evident than in the massive "Futurama" exhibit. Encompassing more than 35,000 square feet, Futurama presented a view of the world of 1960, complete with seven-lane express motorways, a hydroelectric power plant, an amusement park, a mountain resort, a thriving steel town, and a vibrant city with landing decks for helicopters and "autogyros."

As the fair began its final run in the summer of 1940, many Americans were thinking less of a fanciful future and more of the very perilous present. World War II had erupted in Europe the previ-

ous summer, and France had collapsed that very spring, leaving only Great Britain to resist Hitler's domination of Europe. Ironically, although it was tremendously popular with the public, the fair proved to be a financial disappointment. Yet, it had stirred something deep in the imagination of a generation of Americans—the promise of a world transformed by science-based technology.

FROM TOTAL WAR TO TOTAL LIVING

Technological vision and American society were united in the decades immediately following World War II. The United States emerged in the postwar era as the single strongest national economy in the world. Americans who had weathered two decades of depression and war were eager to enjoy the nation's new-found prosperity. Large industrial corporations encouraged the growth of mass consumer markets with advertising slogans such as "After total war, comes total living." To many Americans, "total living" included adding a host of labor-saving devices and new synthetic materials to their everyday lives. Electric refrigerators, stoves, and freezers changed the way Americans dined, while television changed the way they entertained. Plastics and

other synthetic materials were often touted as being "better than nature" and suitable material for couches, beds, clothing, and luggage. With these new materials and devices came new patterns of existence. Many Americans moved from the large metropolitan centers to planned "suburban" communities at the periphery of the big cities. By the late 1950s, science-based technologies and materials offered to many the prospect of a continuous cycle of positive change in American life.

The relation between science-based technologies and American society became more complex during the decade of the 1960s. Sweeping social changes that recast the role of minorities and women and a protracted military involvement in Vietnam led many Americans to question traditional authorities—including the scientific. Books like Rachel Carson's *Silent Spring* encouraged expanded public discussion of the impact of science-based materials (such as DDT) on the larger environment. The increasing coverage and technical sophistication of the national media through the 1970s and 1980s enabled Americans to experience science-based technologies as they evolved. Dramatic technological failures such as the nuclear reactor shutdown at Three Mile Island, the reentry of Skylab,

and the *Challenger* space shuttle explosion highlighted the risks involved in some science-based technologies. However, people also saw the real benefits of science-based technologies in their daily lives—from the eradication of the scourge of smallpox to the tremendous progress in communications that has been made possible by satellites and personal computers.

Today, science-based technologies are at the center of public policy discussion. Earlier visions of a world transformed by science have been tempered by the very real changes in American society. Developing technologies (like genetic engineering) that were formerly the domain of experts are now topics of everyday conversation. While many Americans support the development of new science-based technologies, they often disagree on the application of these technologies and their projected long-term impacts.

The progress of the twentieth century has demonstrated that the "world of tomorrow" was not as fanciful or uncomplicated as the promoters of the 1939 World's Fair envisioned. Predicting the future is a difficult business at best. Yet, one thing is certain as Americans incorporate ever more science-based technologies into their lives: There's sure to be a lively discourse befitting a democratic society.

LESSON PLAN

Step 1

THE WORLD OF TOMORROW?

Objectives

- Evaluate past predictions of the use of science-based technologies.
- Identify how some science-based technologies have been practically applied.

Materials

- Copies of “The World of Tomorrow?” worksheets, pages six and seven.

Subjects

- Social studies, language arts, science

Procedure

1. Using the Introduction as a guide, explain to your students that science-based technologies had a tremendous influence on American society in the middle decades of the twentieth century. Mention that many Americans had a generally positive attitude toward science-based technologies in the decades before the 1960s. *(Be sure to indicate that societal attitudes toward science-based technologies have changed over time.)*

2. Show students the photograph of the 1939 World’s Fair on page eight and provide them with an overview of the historical context of the fair (i.e., Great Depression, growth of American industrial corporations, fascination with science in the popular imagination). Tell your students that the fair represented a celebration of technology and that there were many enthusiastic predictions made about how the world would change through the use of science-based technologies.

3. Give each student copies of “The World of Tomorrow?” worksheets. Explain that they will be looking at two predictions of how science-based technologies would be used after World War II. Ask the students to examine Worksheet 1A (shopping by helicopter) first. Have one student read the text out loud. Ask the students to explain and evaluate the prediction by answering the questions on the worksheet. Did the prediction come true in part or in whole? Why or why not? *(Encourage students to think of the difficulties involved in everyday helicopter transportation: i.e., need for specialized landing pads, hazards of rotor blades, difficulty of learning to fly, repair costs, etc.)*

4. Ask students to look at Worksheet 1B (shopping by television). Again, have one student read the text out loud. Ask the students to explain and evaluate the prediction by answering the questions on the worksheet. Did the prediction come true in part or in whole? Why or why not? *(Encourage students to see the difference between this prediction and the shopping channels they may be familiar with. For example, the prediction did not anticipate credit cards or overnight air shipments.)*

5. Finish the activity by telling students that they have learned some of the difficulties of predicting how science-based technologies will affect people’s lives. Reinforce that technologies are not always implemented in the way that people think they will be.

WORKSHEET 1A

The World of Tomorrow?

Glimpses into the wonder world of tomorrow



Student questions

According to the advertisement, how were people going to travel in the future?

Do people travel to the supermarket this way today?

What parts of this prediction have come true? What seems odd about it to us today?

"Put my groceries in that blue helicopter"

THE new clerk at the village market will soon learn that Mrs. Kimball's helicopter is blue—and that Mrs. Peters' is the bright red job. Almost all the shopping housewives now make use of the plane-parking lot across from the market.

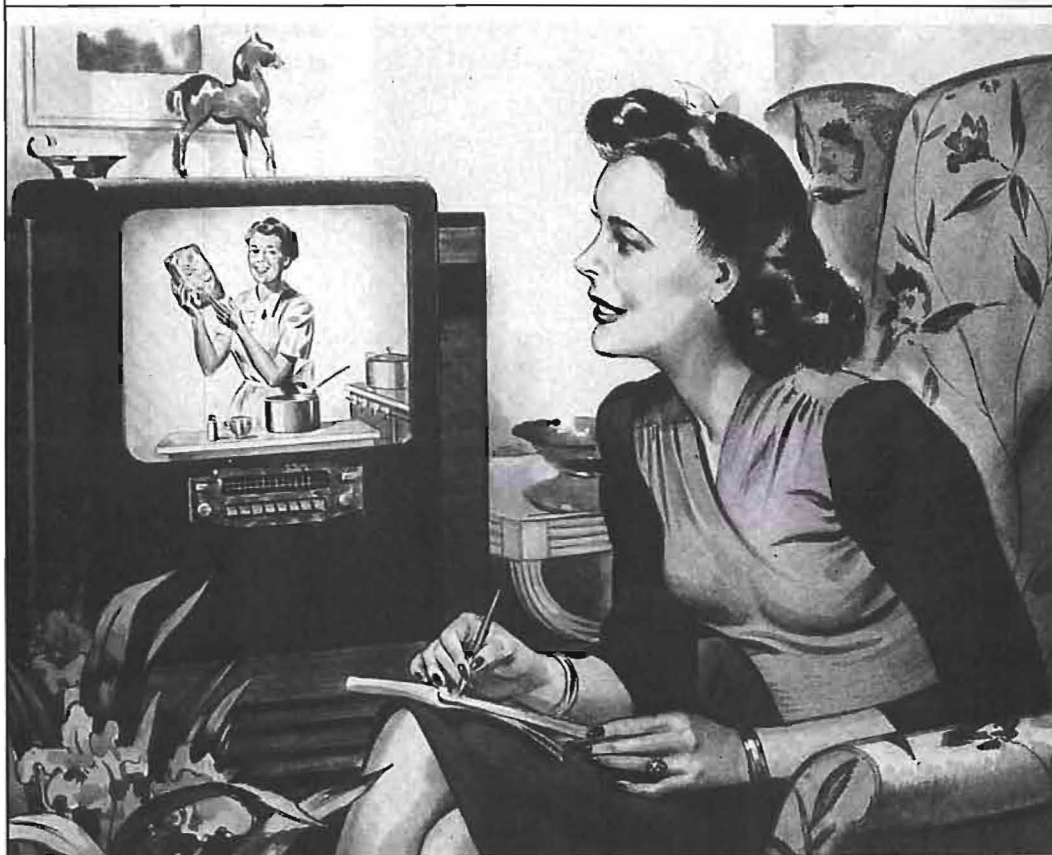
It is interesting to think about this town—Anyplace, U. S. A.—after the war. And helicopters aren't the half of it.

There'll be new kinds of stores, amazing new products on the shelves . . . and new, more efficient packages for the products.

WORKSHEET 1B

The World of Tomorrow?

Glimpses into the wonder world of tomorrow



ADVANCE INFORMATION about post-war shopping

MRS. JONES flicks a switch on her television set and tunes in the Shopping Tele-column of the Air. There she sees and hears the day's best buys, after which she will make up her shopping list and go to market—knowing exactly what she wants. Far-fetched? Not a bit!

Tomorrow's housewives are going to have an opportunity to see products and packages by television right in their own homes . . . in full color, too! Guided by professional

shoppers—yes, and television advertisers—they'll know just what to look for. Shoppers will be better informed and more discriminating than they are today.

That's only one of the many remarkable changes to look for after the war. Because science is making almost incredible progress toward a new way of living.

Stores will change. And products. And packages—for greater eye appeal and product protection.

Student questions

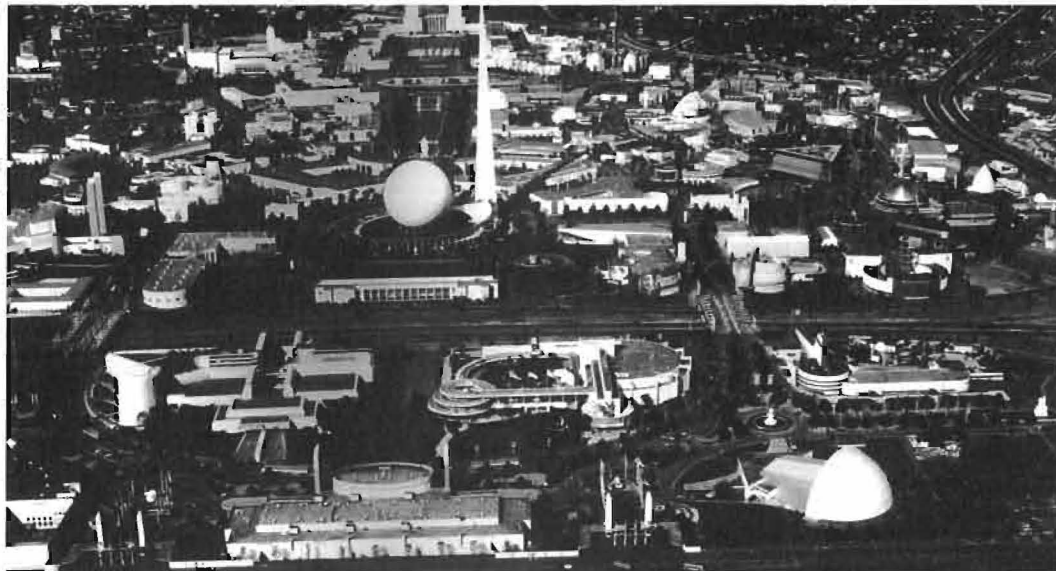
According to the advertisement, how were people going to go shopping in the future?

Do people shop this way today?

What parts of this prediction have come true? What seems odd about it to us today?

LESSON PLAN

Step 2



An aerial view of the fairgrounds of the 1939 New York World's Fair

MY WORLD'S FAIR

Objectives

- Make predictions of the future use of science-based technologies.
- Design a mock-up of a world's fair.

Materials

- Copies of "My World's Fair" worksheet, page nine.
- Paper and pens, pencils, or markers.
- Chalkboard or large-format poster paper.

Subjects

- Art, social studies, language arts, science

Procedure

1. Tell your students that they'll now be predicting how science-based technology might be used in the future. Ask them to recall why earlier visions of the future might seem odd to us today (*answers will include unrealistic expectations, inability to predict other technologies, etc.*). Reinforce that their own concepts might seem just as odd to people in the future.

2. Give each student a sheet of paper and a copy of the "My World's Fair" worksheet. Tell students to imagine that they have been charged to design a world's fair like the New York World's Fair of 1939. As in 1939, they are to highlight science-based technologies that they believe will play a large role in people's lives in the next thirty years.

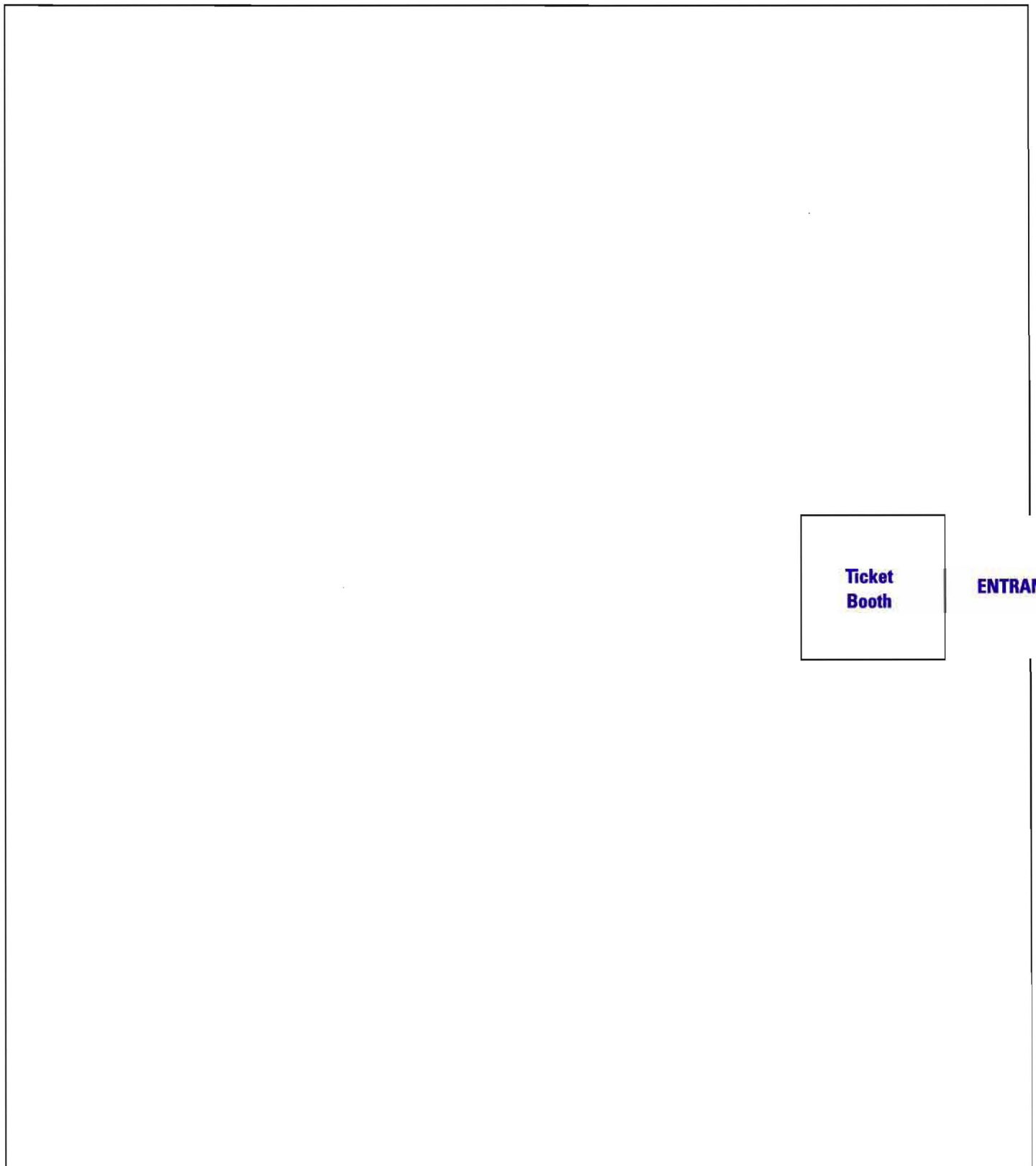
Encourage students to draw specific buildings on their "fairgrounds" and to label their "exhibits."

3. After the students have completed the "My World's Fair" worksheet, ask them to list the science-based technologies they chose on the sheet of paper. Have each student show his/her vision of the future to the class. Assign one student to write the technologies on the chalkboard or a larger piece of paper. Conclude the activity by having the class vote on which technologies they think are most likely to influence people's everyday lives in the future. If possible, get the class prediction published in the school newspaper, or if you have desktop publishing capabilities, make it the subject of a class newsletter.

WORKSHEET 2

My World's Fair—Featuring the World in 30 Years

Design your own vision of the “World of Tomorrow” using the fairground space below.



LESSON PLAN

Step 3

A WORLD TRANSFORMED

Objectives

- Identify how a science-based material was used in the home after World War II.
- Evaluate reasons why people were encouraged to use science-based materials.
- Identify natural materials that were replaced by science-based materials.
- Observe how science-based materials are used in the classroom today.

Materials

- Copies of “A New Material” worksheet, page 11. Note: You may need to enlarge the page or use a magnifying glass to read all of the copy.

Subjects

- Social studies, language arts, science

Procedure

1. Using the Introduction as a guide, explain to your students that many of the science-based technologies and materials highlighted at the 1939 New York World’s Fair came into widespread use in

American homes during the 1950s. Be sure to provide students with a historical background to the postwar period (United States as the healthiest world economy after World War II, pent-up demand for consumer goods, etc.). Mention that Americans were encouraged through advertising to adopt science-based materials to replace natural materials that had been used for centuries.

2. Tell your students that they will be looking at an advertisement from the 1950s for a new science-based material, a plastic that the B.F. Goodrich Company called “Koroseal.” Ask students to think about why people might want to replace traditional materials in their homes with science-based materials.

3. Give each student copies of the Koroseal advertisement and the “A New Material” worksheet. Have the students read the advertisement out loud (you may choose to omit the last paragraph on pricing and availability). After they have read the advertisement, direct your students to the questions on the “A New Material” worksheet. Give them a few minutes to answer the questions on

their own.

4. Begin a class discussion based on the worksheet questions. Students may need encouragement in determining what materials were replaced by Koroseal—you may wish to prompt them by asking what natural materials might be used to make tires and raincoats (rubber), briefcases and luggage (leather), or tablecloths (cotton). Some students may also find it difficult to identify science-based materials in the classroom. Encourage them to think about objects such as desks, book bags, clothing (especially outerwear), and wall hangings.

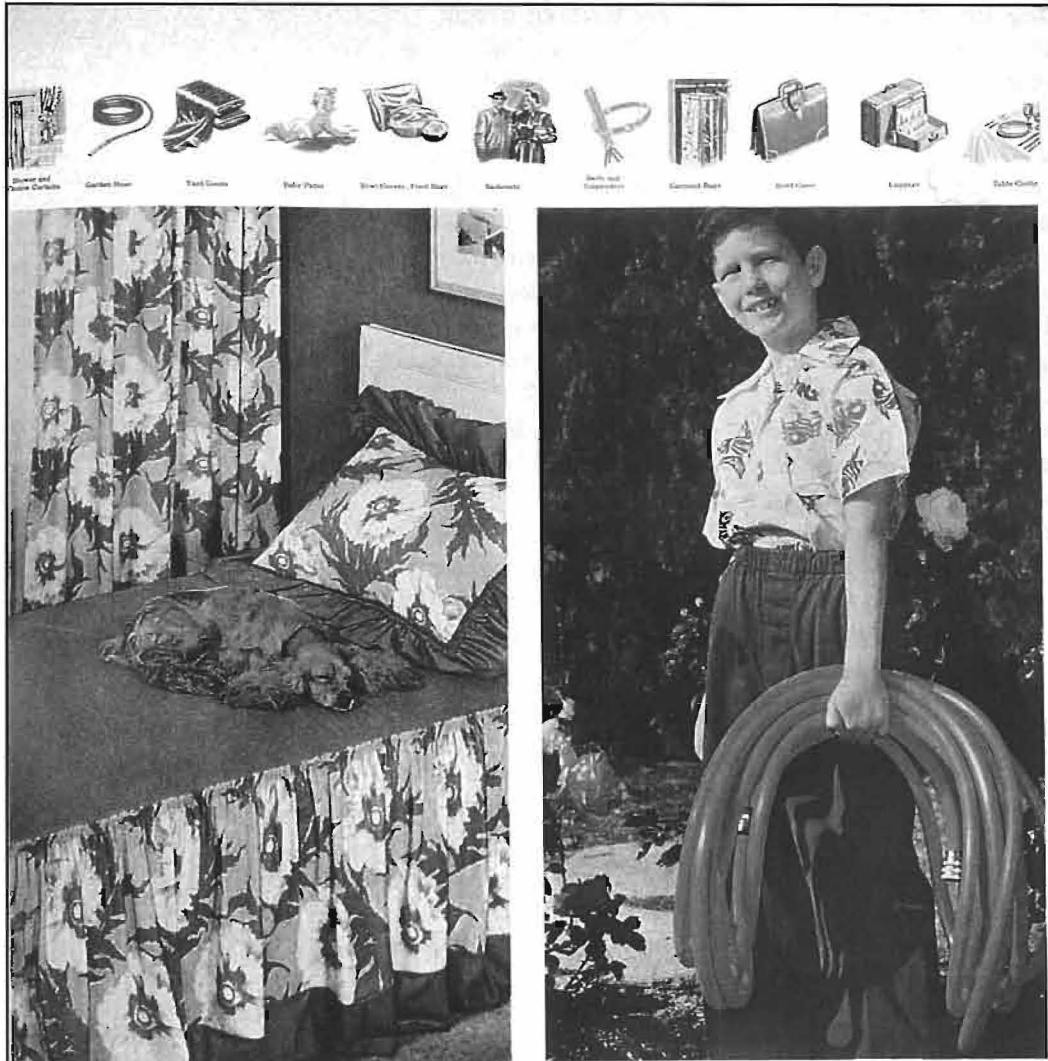
5. Conclude the activity by reinforcing that science-based technologies and materials significantly changed the everyday lives of Americans during the post–World War II period. Tell students that they will next see how science-based technologies and materials have changed the lives of Americans over the past twenty years.

WORKSHEET 3

A New Material

Directions

Look at the 1950 Koroseal advertisement below and answer the following questions. Use the back of this page or a separate sheet of paper to write your answers.



List three reasons why Koroseal was said to be a good material for bedspreads and draperies.

What natural materials might be used in bedspreads and draperies? How do these materials compare to Koroseal?

List three reasons why Koroseal was said to be a good material for a garden hose.

What natural materials might be used in a garden hose? How do these materials compare to Koroseal?

What were some other objects that were made out of Koroseal?

Look around your classroom—do you see any science-based materials? What natural materials might they have replaced?

From beds to flower beds— the modern material is Koroseal

UNLESS you live in the middle of the ocean, dust will settle on bedspreads and draperies. Just shake, brush or wipe off those in the picture; they're Koroseal flexible material. And if dogs and children ever get muddy paws or sandy hands on either, a damp cloth or an easy wash will make them new again. That's the beauty of Koroseal—it's so easy to keep beautiful, and new and fresh. And Koroseal upholstery is so easy to wash that you can choose it for cheerfulness—you're not limited to "colors that won't show the dirt".

Koroseal flexible material is permanently waterproof, which makes it ideal, too, for garden lawns. This is a new, wonderful kind of hose that weighs only about half as much as other kinds—a child can carry a long length easily.

Koroseal garden hose is guaranteed for 10 years. It can't rot, so you can leave this hose out in the sun all summer, if you like, for years. Its brilliant colors may fade a little in time, but neither sun nor air will weaken it. And you never need drain it.

Koroseal resists wear, scuffing and damage, so you can drag Koroseal garden hose over concrete driveways, around rough tree trunks; oil on the driveway won't hurt it; no damage even if your car runs over it.

Koroseal can be made in attractive colors—the garden hose is scarlet or emerald green. Only \$9.35 for 50 feet or \$13.20 for 75 feet—the length that takes care of most lawns. At department or hardware stores. It will last so long you'll find it the lowest-cost hose you've ever owned. Like everything else

of Koroseal, the hose is labeled; insist on that label, for greatest value. The B. F. Goodrich Company, Koroseal Department, Marietta, Ohio.

Trade Mark—Reg. U. S. Pat. Off.

Koroseal
FLEXIBLE MATERIALS
BY
B.F. Goodrich

LESSON PLAN

Step 4

SCIENCE-BASED MATERIALS IN MY HOME

Objectives

- Identify science-based materials that have come into widespread use in the past twenty years.
- Evaluate how science-based technologies and materials have changed American society over the past twenty to thirty years.
- Identify natural materials that have been replaced by science-based materials.

Materials

- Copies of "Science in My Home" Take-Home Page, page 13 (English) and 14 (Spanish).

Subjects

- Social studies, language arts, science

PROCEDURE

1. Tell your students that science-based materials and technologies continue to change American society. Be sure to point out that this change has been just as profound over the last twenty to thirty years as it was during the decades after World War II. To begin this lesson, you may wish to read the initial

paragraphs of the introduction aloud to the class. See whether your students can identify familiar science-based technologies that were not present in this "imaginary world."

2. Give each student a copy of the "Science in My Home" Take-Home Page. Tell your students that this is a take-home activity in which they'll be looking about their own homes for evidence of science-based materials and technologies that have come into widespread use over the past twenty to thirty years. Suggest that the students ask a parent or other adult they know to help them with the activity. Make sure your students understand that objects that they may not immediately think of (such as sneakers with velcro straps or fluorescent colored clothing) are made of science-based materials that were not generally available twenty or thirty years ago.

3. After the students have completed the Take-Home Page, assign one student to draw a chart on the chalkboard with the following categories: *Object, Material it is made of, Natural material replaced*. Ask each student to share with the class some of the objects that he/she found at home. Reinforce that these objects must be products of science-based technologies and materials introduced in the past twenty to thirty

years. Have one student compile a list of the objects and materials found, using the chart on the chalkboard. Ask the students to consider the natural materials that might have been replaced with science-based materials. Encourage students to consider that in some cases, there may be no equivalent natural material.

4. Finish the lesson by asking your students to summarize (in a discussion) how they think science-based technologies and materials have affected people's lives since their parents or other adults they know were their age. Students' initial answers will probably focus on the presence of consumer products such as VCRs, CD players, or computers (which were likely mentioned in the class review of the Take-Home Page). Encourage your students to think of the social effects (changes in the way people communicate and interact, changes in jobs, etc.) of these science-based technologies and materials. Ask them whether they think these changes were generally positive, negative, or mixed. Conclude by asking students to think how their own everyday lives may be changed by future science-based materials and technologies.

TAKE-HOME PAGE

Science in My Home

To the teacher
■ Duplicate this page for students.
■ Use with Lesson Plan Step 4.

Publication of *Art to Zoo* is made possible through the generous support of the Pacific Mutual Foundation.

Technology continues to change our lives in countless ways. For example, many of the objects and materials you have in your home did not exist when your parents were growing up. Ask them to help you look around your home to find some things that they did not have when they were your age.

Object	Material it is made of

TRABAJO PARA HACER EN FAMILIA

Ciencia en Mi Casa

Al Profesor

- Copie esta página para los alumnos.
- Úsela con el cuarto paso del plan de la lección.

Esta publicación ha sido posible gracias al aporte generoso de la Pacific Mutual Foundation.

La ciencia continúa cambiando nuestras vidas en muchas maneras. Por ejemplo, muchos de los objetos y materiales que hay en su casa no existían cuando sus padres eran niños. Pídale a sus padres que le ayuden en su casa a identificar y encontrar algunas cosas que ellos no tenían cuando ellos eran de su edad.

Objeto	De Qué Material Está Hecho

RESOURCES

BOOKS

Cohen, Barbara, Steven Heller, and Seymour Chwast. *Trylon and Perisphere*. New York: Harry N. Abrams Incorporated, 1989.

Corn, Joseph J., and Brian Horrigan. *Yesterday's Tomorrows: Past Visions of the American Future*. New York: Summit Books, 1984. (out of print)

Halberstam, David. *The Fifties*. New York: Villard Books, 1993.

Inglis, Fred. *The Cruel Peace: Everyday Life in the Cold War*. New York: BasicBooks, 1991.

May, Elaine Tyler. *Homeward Bound: American Families in the Cold War Era*. New York: Basic Books, 1988.

Zim, Larry, Mel Lerner and Herbert Rolfes. *The World of Tomorrow: The 1939 New York World's Fair*. New York: Harper & Row Publishers, 1988.

VIDEO AND OTHER MEDIA

84-minute video (also available in 58-minute edited version) on the 1939 New York World's Fair entitled *World of Tomorrow*. Produced by Lance Bird and Tom Johnson and available through Direct Cinema Ltd., PO Box 10003, Santa Monica, CA 90410. \$95.00 purchase price (for both the 84- and 58-minute versions), available for rental at \$40.00. Call for more information at (800) 525-0000.

Interdisciplinary science kits drawn from the *Science in American Life* exhibition include

teacher guides, materials for experimentation, historical documents, computer software, and CD-ROM or videodisc media. Purchase prices range from \$249.95 to \$599.95.

Available from Tom Snyder Productions, 80 Coolidge Hill Road, Watertown, MA 02172-2817. Call for more information at (800) 342-0236.

Poster from *Yesterday's Tomorrows: Past Visions of the American Future* available from the Smithsonian Institution Traveling Exhibition Service for \$5 plus \$4 shipping and handling. Write to: SITES Publications Office, Department 0564, Washington, D.C. 20073-0564 or phone (202) 357-3168.

PHOTO CREDITS

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"Electro the Moto Man from the 1939 World's Fair." Edward J. Orth Collection, National Museum of American History

Inside Front Cover

"National Youth Administration poster, 1938." Courtesy of Herbert Rolfes.

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Warshaw Collection, National Museum of American History.

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Warshaw Collection, National Museum of American History.

Page 8

Edward J. Orth Collection, National Museum of American History.

Page 11

Life Magazine April 17, 1950.

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RELATED RESOURCES

The *Science in American Life* exhibition at the Smithsonian's National Museum of American History features a Hands on Science Center where visitors can explore some of the exhibition's scientific and historical topics and enjoy the playful side of experimentation at the same time.

Among the many activities, visitors can test for food additives, use lasers to see light, remove DNA from cells, and tease their minds with intelligence tests.

For more information about education programs and materials, call (202) 357-1481 or (202) 357-1563 (TTY) Monday through Friday, 10 a.m. to 5 p.m.

ART TO ZOO

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ART TO ZOO ONLINE

This publication is also available electronically over the Internet (anonymous ftp server: EDUCATE.SI.EDU) and America Online (keyword Smithsonian). Issues starting with spring 1993 are part of this online collection. Look for more information on Smithsonian electronic educational services and publications in future issues of *Art to Zoo*.

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