



Project 2061
American Association for the Advancement of Science

K-12 Curriculum Design: Getting Started

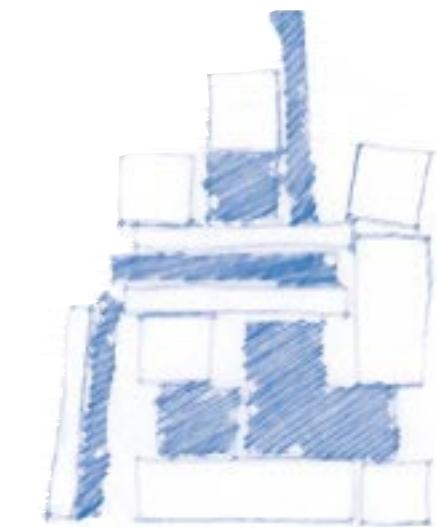
A K-12 curriculum that promotes science literacy and satisfies local requirements won't unfold by accident. Nevertheless, observes Project 2061's Associate Director Andrew Ahlgren, "Seldom does anyone actually design a whole K-12 curriculum. Instead, the typical curriculum evolves." With an upcoming publication, *Designs for Science Literacy*, Project 2061 hopes to encourage a more purposeful, deliberative approach to curriculum reform—a design approach, such as one finds in engineering and architecture.

One of the strengths of the book is its apt architectural analogies, reports Philadelphia teacher and Project 2061 collaborator Marlene Hilkowitz. These, she says, "can help teachers realize that they are building something. Teachers need to think of themselves as architects of the curriculum and keep in mind goals and constraints."

Designs begins by describing how the design process and design principles can be useful in creating a K-12 curriculum. It then takes a look at what curriculum design might be like in the future when a greater variety of curriculum units and technologies—keyed to science literacy goals—are available. Finally, *Designs* offers a number of recommendations to help educators begin to make changes now.

IMPROVING TODAY'S CURRICULUM

Reviewed extensively by teachers, administrators, and curriculum specialists, the recommendations for getting started are an "anchor to reality," according to Ahlgren. They suggest ways that school faculty—who may lack the time, resources, or authority to take on the entire curriculum at once—can make short-term improvements without losing sight of long-term design goals. Specifically, they



describe ways to build professional capability, unburden the curriculum, and enhance curriculum coherence.

Building Professional Capability. It is not enough to simply place *Benchmarks*, the *National Science Education Standards*, or state standards in the hands of teachers, with no special instructions beyond "Use this." Many teachers—particularly those whose specialties lie outside the sciences—may first need to build up their own understanding of science, mathematics, and technology. And all teachers responsible for science or mathematics will want to study the science literacy goals identified for their students; consult research to identify difficulties that students are likely to have with particular ideas; and consider the pace, order, and context in which students are most likely to achieve the goals.

Teachers also need practice using specific learning goals as the basis for evaluating science and mathematics curriculum materials, designing instruction, and monitoring student progress. Where existing research and past experience don't suggest what effective practices are, teachers may have to conduct their

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2061 today

Science Literacy
for a
Changing Future

Mathematics

Natural Sciences

Social Sciences

Technology

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ABOUT PROJECT 2061

Project 2061 of the American Association for the Advancement of Science is a long-term initiative to reform K-12 education nationwide so that all high-school graduates are science literate. Its first report, *Science for All Americans*, outlined what all high-school graduates should know and be able to do in science, mathematics, and technology. Project 2061 is now creating a coordinated set of reform tools to help educators meet those goals in their own districts.

Working with six school-district teams of teachers and administrators, Project 2061 developed *Benchmarks for Science Literacy*, a curriculum design tool that expands the literacy goals of *Science for All Americans* into specific learning goals for the ends of grades 2, 5, 8, and 12. To help educators improve their own understanding of science literacy, Project 2061 has released its first CD-ROM tool, *Resources for Science Literacy: Professional Development*. And to engage a wide audience in discussions about systemic reform, Project 2061 has released on the World Wide Web *Blueprints for Reform*, which recommends how various aspects of the K-12 education system must change to accommodate necessary curriculum reforms.

These tools will soon be joined by a curriculum evaluation tool to help educators identify curriculum materials that meet the science literacy goals outlined in *Benchmarks* and by *Designs for Science Literacy*, a guide that will encourage educators to take a systematic design approach to planning a K-12 curriculum. Eventually, Project 2061 intends to integrate all of its tools via a computer-based, interactive multi-media curriculum-design and resource system.

Project 2061 is supported by grants from the Carnegie Corporation of New York, the John D. and Catherine T. MacArthur Foundation, the Andrew W. Mellon Foundation, the National Science Foundation, and The Pew Charitable Trusts.

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Project 2061 print and electronic products are available from Oxford University Press; call 1-800-451-7556.

Getting Started *continued*

own experiments—systematically trying out a variety of approaches, keeping track of what works, and perhaps comparing findings with other school districts. *Designs* describes methods and resources—including Project 2061's array of professional development tools—that can help prepare teachers to assume a larger role in determining their local curriculum.

Unburdening the Curriculum. Teachers, working with overstuffed textbooks, constantly feel the pressure of covering too much material in too little time. Many suspect that their students are not learning ideas well—a suspicion readily confirmed by education research. Even college students often have the same misunderstandings of science that elementary students have. Evidently, students need more time to wrestle with important ideas in science in order to understand them adequately.

Designs offers suggestions to help teachers become more attuned to the most important learning goals and confident about trimming the lower-priority curriculum around them. Specifically, it recommends steps that teacher teams can take to 1) reduce the number of topics in the curriculum; 2) remove excessive detail from the topics that remain; 3) cut back unnecessary technical vocabulary that obscures important ideas; and 4) eliminate needless repetition, whether within a unit or across grades. In each case, *Designs* suggests a gradual process where teams of teachers attend closely to agreed-upon learning goals, try out changes on a small scale—perhaps just one topic and one classroom at a time—and build a consensus among colleagues before making recommendations for the district.

Marlene Hilkowitz, who leads many workshops to help science and mathematics teachers implement benchmarks and standards, finds this section of *Designs* particularly useful: “Teachers often don’t realize how critical it is

to streamline the curriculum. *Designs* puts it convincingly—you have to let something go to make room for the rich stuff.”

Increasing Curriculum Coherence. What school district would advertise as its goal, “Students should be exposed to an assortment of random concepts and facts that they are unlikely to understand or remember?” Yet that is often what results from the traditional assortments of topics. By contrast, *Benchmarks for Science Literacy* carefully sequences learning goals to take into account how student understanding of particular ideas builds over time; it also attempts to illuminate important connections within and among various subjects. *Designs* recommends ways that educators can use *Benchmarks* and related tools to increase coherence across grades and across subjects. This kind of curriculum encourages students to develop a “fabric of understanding” that enhances the quality and usefulness of what they learn.

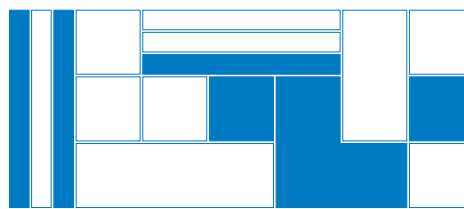
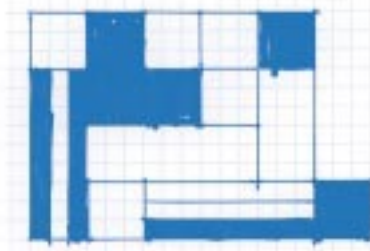
For example, to avoid needless repetition of topics year after year, as well as to make sure that no idea important to science literacy slips through the cracks, *Designs* urges that cross-grade teams of teachers establish who is responsible for teaching which specific learning

goals at what grade level. The organization of *Benchmarks* itself, along with K-12 growth-of-understanding maps that

supplement *Benchmarks*, can guide such cross-grade planning. *Designs* also points out ways to make connections within and across subjects.

COMING SOON

Designs will be published in 1998, along with a supplementary CD-ROM, which will include utilities to help school districts organize their reform efforts. Based on feedback from educators, Project 2061 will eventually create an integrated print/electronic version of *Designs*.



Meet Reform Leader Rita Rice

Before retiring last July, Rita Rice served as an educator in the Philadelphia School District for 30 years. She began as an elementary teacher, taught science at the K-6 level for over a decade, then spent several years as a science supervisor. For the last four years, Ms. Rice served as Co-Director of the National Science Foundation's Urban Systemic Initiative (USI) in Philadelphia. Project 2061 staff member Natalie Nielsen interviewed Ms. Rice to learn more about her experiences in systemic reform.

NN: I would imagine that you saw numerous changes during your career. What are the most notable ones?

RR: Those that impact classroom practice. I saw major changes in curriculum, instruction, assessment, technology, and school organization. For example, there's been a shift from textbook-driven learning goals and teacher-directed instruction to standards-driven learning goals with more hands-on and student-centered instruction. Professional development and assessment also now focus on standards.

NN: What role has the USI played in Philadelphia in some of these changes?

RR: The USI works hand-in-hand with Superintendent David Hornbeck's Children Achieving reform agenda. This agenda addresses systemic issues such as policy and organizational reform and paves the way for the USI to focus on science, mathematics, and technology.

For example, to get decision making closer to the classroom, schools are divided into small learning communities—schools within schools. Philadelphia has gone from six sub-districts to 22 K-12 feeder-pattern clusters. The idea is that the clusters make it easier for students, parents, teachers, and administrators to work together. The USI provides professional development that assembles teachers from all grades to focus on the flow of learning from kindergarten through high school and how it relates to standards in science and mathematics.

NN: As you say, the most recent reforms are part of a systemic effort. How is systemic reform different?

RR: Systemic reform means pulling the rug out from under the entire system and changing everything all at once, rather than just tinkering with the parts. There's nothing wrong with tinkering if you're fine-tuning a system that basically works. But if the failures of the system are pervasive, as they are in most large urban school districts, you really need to examine everything.

NN: For example?

RR: In Philadelphia, a new standardized test will assess whether students are meeting learning goals. Teachers not only have to revise—or replace—their current resources to meet the district standards, they're also expected to use manipulatives, provide real world experiences, help students construct their own learning, embed performance assessment into learning, use technology, integrate disciplines, and address multiculturalism. These are new ideas to many teachers.

NN: That sounds overwhelming.

RR: It's not boring! Even if teachers have actually received professional development in these areas, other questions surface when they get into the classroom: How do I get 33 students to construct their own learning in a 45-minute period? How can I use technology if my kids don't have computer access? How can I get resources that are aligned with standards? When will I meet with other teachers?

These are just some of the walls teachers run into. That's why it's important to make all the changes and remove all the barriers at the same time. If you only change one little piece at a time, you won't get past the first wall.

NN: Philadelphia is the site of one of Project 2061's six school district centers. How has that relationship affected systemic reform there?

RR: For three years, 25 K-12 teachers and administrators from Philadelphia met for a month every summer and one day a week during the school year. It was a remarkable, life-changing experience, and the reform effort in Philadelphia is still reaping the rewards. Most science, mathematics, and technology leaders in the district's central office and the USI were



Rita Rice

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Exhibit Schedule

During the 1998 conference season, keep an eye out for Project 2061's exhibit booth and presentations at the following meetings:

Association for the Education of Teachers in Science, Jan. 8-11, Minneapolis, MN. **Contact:** George Davis, AETS, 218-236-2904.

American Association for the Advancement of Science, Feb. 12-17, Philadelphia, PA. **Contact:** Ed Leonardo, AAAS, 202-326-6459.

American Association of Colleges for Teacher Education, Feb. 25-28, New Orleans, LA. **Contact:** Sonya Goree, AACTE, 202-293-2450.

International Technology Education Association, Mar. 8-10, Fort Worth, TX. **Contact:** General Office, ITEA, 703-860-2100.

Association for Supervision and Curriculum Development, Mar. 21-24, San Antonio, TX. **Contact:** Customer Service Center, ASCD, 703-549-9110, 800-933-2723.

National Council of Teachers of Mathematics, Apr. 2-5, Washington, D.C. **Contact:** NCTM, 703-620-9840.

National School Board Association, Apr. 4-7, New Orleans, LA. **Contact:** NSBA, 703-838-6722.

National Science Teachers Association National, Apr. 16-19, Las Vegas, NV. **Contact:** Kevin Bullock, NSTA Convention Office, 703-312-9288.

RICE *continued*

trained by Project 2061. The team members provide the lion's share of professional development for science, mathematics, and technology teachers citywide, and they also had a hand in developing Philadelphia's standards.

NN: Can you point to a particularly valuable aspect of the professional development?

RR: Project 2061 has trained teachers citywide to analyze curriculum resources for their match to standards. This training has helped teachers to become better "shoppers" for standards-driven curriculum resources. In addition, elementary teachers were able to modify science kits to align with standards.

This analysis procedure now needs to be applied to assessments. What's the point of aligning your curriculum to standards when you measure progress with a high stakes assessment instrument that isn't aligned?

NN: What other areas need attention?

RR: Leadership development has to be ongoing, which means maintaining and expanding ties to universities and professional organizations. We need to replicate the Project 2061 experience in subject areas other than science. Philadelphia is becoming performance-driven as a system. To succeed, that requires evidence that progress has or hasn't occurred. That means lots of documentation—taking notes, comparing results with other teachers, reading research—not just one high-stakes test. Precious little documentation goes on at the school level—partly from lack of time, but also from lack of expertise and even inclination. Teachers need time and training to learn to seek evidence that what they're doing is working.

NN: What do you see as next steps?

RR: Educational reform needs to extend K-16 at least. We need stronger, more meaningful partnerships between educators at the K-12 and university levels

It would help if universities shifted from the textbook/lecture mode. Also, it would be great if new teachers entered the field well-versed in effective curriculum, instruction, assessment,

technology, documentation procedures, and so forth. Professional organizations could help in this regard.

NN: I'm sure you faced many obstacles to reform. What are the most stubborn?

RR: Most obstacles boil down to insufficient time and money. But it's also the word "reform" itself. It implies that something is broken, so you fix it, and then you're finished. Reform can help get stakeholders on a bandwagon, but then they often expect immediate results. If results are immediate, then they're probably also superficial. I prefer ongoing and in-depth growth and development.

NN: How do you balance the long-term nature of systemic reform with the demand for instant results?

RR: If documenting student progress toward specific learning goals became routine—especially at the classroom level—then maybe we could "keep our eye on the ball" better and for longer periods of time. It would also address the constant public pressure for results. Any change needs time to work. Give it three years, document its effectiveness, then either adjust it or throw it out, based on evidence. Which brings up another obstacle—politics and special-interest groups. Documented evidence can also be a powerful tool for dealing with them.

NN: Ten years down the road, what reforms are likely to survive?

RR: I hope the notion of aligning curriculum, instruction, assessment, professional development, and resources with learning goals will last. The USI and Project 2061 have spent a lot of time training teachers to be intelligent consumers of curriculum materials. Hopefully, this type of professional development and the integrated K-12 professional development will continue, and maybe even extend to the university level. Finally, if the notion of evaluating school performance based on student achievement survives, all of the above—and more—are likely to continue.

Working with the Department of Education

To develop a procedure for judging whether instructional materials will help students achieve the learning goals in *Benchmarks for Science Literacy*, Project 2061 staff had to sift through many issues that complicate curriculum evaluation. They had to consider how to sample materials to evaluate them fairly; how to judge, in the absence of empirical evidence, whether instructional approaches seem likely to help students achieve stated learning goals; what to accept as evidence that criteria have been met; and so on. As a result, Project 2061 can now offer some practical advice to other groups. Recently, Project 2061 brought its expertise to bear on two important projects at the U.S. Department of Education.

A TIMSS RESOURCE KIT

To help educators respond to findings from the Third International Mathematics and Science Study, the Office of Educational Research and Improvement (OERI) and the National Center for Education Statistics at the Department of Education developed a Resource Kit. The kit offers readings, videos, and practical guidelines and advice on making changes in science and mathematics education. OERI invited Project 2061 to contribute to the kit's curriculum module. "We wanted to include the most promising state and national efforts, and to encourage people to be more thoughtful about selecting materials," says OERI senior research associate Pat O'Connell Ross.

For the module, Project 2061 provided an overview of its procedure for evaluating curriculum materials. Over the past few years, project staff has been developing and refining the procedure with the help of teachers, teacher educators, and curriculum developers. The overview highlights the procedure's close attention to specific learning goals, its explicit criteria for examining content and instruction in light of specific goals, and its insistence on specific evidence that criteria have been met.

Since September, the Department of Education has been distributing the Resource Kit to school districts around the country. Educators have also been contacting Project 2061 to discuss possible uses for the procedure, or to arrange for special training in it.

Project 2061's Curriculum Director Jo Ellen Roseman, who helped develop the procedure and hears from many interested educators, says "What I think impresses them is the thoughtfulness of the procedure. We put a lot of work into defining and illustrating our criteria in order to obtain reliable results from one evaluator to the next." Feedback from the TIMSS Resource Kit audience, says Roseman, can only help project staff as they prepare to publish *Resources for Science Literacy: Curriculum Materials Evaluation*, which will include the full procedure, along with sample analyses and discussions.

EXPERT PANEL FOR MATHEMATICS AND SCIENCE LITERACY

Meanwhile, Project 2061 staff has been working closely with OERI's Expert Panel for Mathematics and Science Literacy. Project 2061 Director F. James Rutherford is co-chair of the panel, which was formed to create a process for identifying "promising" and "exemplary" K-12 programs—and thereby to provide some guidance for educators responsible for local curriculum. And Roseman has described Project 2061's curriculum evaluation procedure and criteria to the panel.

O'Connell Ross, who directs the efforts of the expert panel, reports that the panel "relied on Project 2061's expertise and used Project 2061's evaluative criteria as a guide in developing its own." Project 2061 staff also provided training to the two groups of educators who would field test the panel's criteria on science and mathematics materials. Project 2061 will continue to support the expert panel as needed.



TO ORDER **ATTAINING EXCELLENCE: A TIMSS RESOURCE KIT**, CONTACT THE SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, P.O. BOX 371954, PITTSBURGH, PA 15250-7954; TELEPHONE (202) 512-1800; FAX: (202) 512-2250.

FALL/WINTER 1997

Professional Development with a Difference



Blueprints for Reform: On-Line and Interactive

Published on the Web in August, *Blueprints for Reform* became Project 2061's first tool designed primarily for on-line use. "By putting *Blueprints* on the Web, we could add features to encourage visitor participation. We're hoping that this will engage a wide audience in discussions about systemic reform," said Dr. Gerald Kulm, Project 2061's program director for *Blueprints*.

Blueprints On-Line was developed to capture the voices of the many stakeholders in reform. Each of its twelve chapters contains questions designed to stimulate debate—not only about the chapters themselves, but also about the education system in general and how science literacy can become a reality.

In October, Project 2061 initiated the first on-line conference in conjunction with a presentation at the November meeting of the School Science and Mathematics Association. The conference addressed school organization, curriculum connections, materials and technology, and assessment, featuring comments from authors and reviewers of the original Blueprint papers.

Project 2061 will soon begin publishing on-line surveys about science education reform. Each month will bring a new survey, so be sure to visit us at <http://project2061.aas.org/> to participate in the debate and browse the archives for past discussions.

In light of the results of the recent Third International Mathematics and Science Study, all eyes are on states and school districts to improve student performance. Educators are increasingly being held accountable for local, state, or national benchmarks and standards in science and mathematics. Realizing that simply having learning goals in place does not ensure their

use, many states and districts are seeking outside professional development to help educators understand those goals and how to teach them. However, a recent study by Shugoll Research revealed that while K-12 science and mathematics teachers spent an average of five days in professional development in the past year, only a fraction of that training focused specifically on learning goals. Project 2061 is aiming to change that.

Through a variety of workshops, Project 2061 helps educators to develop the knowledge and skills they need to implement science literacy goals. This is a long-term process that for many teachers begins with an introduction to benchmarks- and standards-based reform and its implications for classroom practice. According to Mary Ann Brearton, Project 2061's Field Services Coordinator, "Our introductory workshops illustrate the need for reform and help teachers see themselves as agents of change." Once educators gain that sense of ownership, Brearton adds, the workshops highlight the value of Project 2061's tools in planning instruction and assessments that meet benchmarks and standards.

A BIG DIFFERENCE

Participants report that Project 2061 workshops forever change their view of science teaching. Meghan Lattin recently attended a workshop that introduced her and five of her colleagues from Baltimore's Timonium Ele-

mentary School to *Benchmarks* and its possible uses. The activities in the workshop—particularly using the growth-of-understanding maps on *Benchmarks on Disk* that display connections among benchmarks—enabled her to see "what my students should know when they come to me, what I should be teaching them, and what they will learn after they leave my classroom."

Teachers also learn skills in the workshops that they can apply immediately. Many workshops include experience in using Project 2061's materials-analysis procedure to analyze curriculum materials, instructional strategies, frameworks, and assessments in light of specific national, state or local learning goals in science and mathematics.

Lianne Yamamoto, a mathematics education professor at the University of Idaho, arranged for Project 2061 to give a series of such workshops for K-12 teachers from five Idaho school districts. She was pleased when, at the end of the two-week session, teachers remarked that they had "finally gotten professional development with substance." She noted that "One hundred percent of the teachers reported that they left the workshop inspired and comfortable using *Benchmarks*." Several teachers told Yamamoto that during this school year they plan to put into practice what they learned about analyzing curriculum and instruction.

SCALING UP

By all accounts, Project 2061's workshops have been effective in helping educators. But so far, Project 2061 has reached only a small percentage of the nation's 2.5 million teachers.

To reach more teachers, Project 2061 is planning to expand its capacity to deliver standards-based professional development. Through a cadre of workshop leaders, Project 2061 will establish on-going relationships with as many schools and districts as possible, guiding them through long-term, systemic reforms. Eventually, these schools and districts will be able to promote science literacy independently. George Nelson, Project 2061's Deputy Director sees this as "a unique opportunity for educators at the local level to take advantage of national reforms." The project intends to begin scaling up in 1998.

DIRECTOR'S NOTES

Sputnik at Forty

What an incredible forty years we have had in science and technology, thanks in no small measure to Sputnik. We were stunned when the Soviet Union successfully launched Sputnik on October 4, 1957, and exhilarated less than a dozen years later when, on July 20, 1969, an American landed on the moon. We might have reveled in the glory of it all and turned our attention away from space to other matters, for at the time there was no shortage of problems here on this planet. But we didn't.

Instead we created ever more sophisticated and powerful tools for exploring the universe, as we set our sights on Mars, Jupiter, Saturn, and beyond, on Venus and Mercury and the Sun itself, and even the itinerant comets. In four decades we have surely learned more about the solar system than we had in all of the past centuries put together. Nevertheless, we have tens of decades of exploration ahead of us. Moreover, thanks to modern information and communications technologies (for which, indirectly at least, Sputnik can claim some of the credit), ordinary citizens can be in on the adventure as it happens, day by day. It is as though Columbus, say, or Lewis and Clark, had been able to send back video accounts for us to watch on the nightly news or download from the Web.

A NEW FRONTIER

The story is much the same in astronomy as a whole. Sputnik ushered in a forty-year period of sustained and stunning progress that has radically changed our understanding of the size, make-up, history, and behavior of the physical universe. But the story is not the same in science education.

It is true that Sputnik provoked a huge increase in the education reform efforts that had begun a few years earlier. In higher education, the race to the moon stimulated the nation to produce the scientists and engineers who would assure U.S. dominance in space. In the schools—due largely to the National Sci-

ence Foundation and the National Defense Education Act—the development of new science and mathematics courses proceeded on a scale unprecedented in our history, as did the expansion of summer institutes and other opportunities for teachers to improve their knowledge and skills. In many ways it was a golden age in the history of science education, one that was exciting and productive.

A POWERFUL REMINDER

But reaching the moon was not followed, as in science, by an intensification and broadening of the science education reform effort. On the contrary, we acted as though the game was over and turned away from reform for nearly fifteen years. It wasn't until 1983, after losing many of the gains of the Sputnik years, that we were again goaded into action, this time by *A Nation at Risk* and concerns about our ability to compete in a global economy. While much has been accomplished in this most recent reform movement, imagine where we might be today if we had been as steadfast in seeking universal science literacy as we were in exploring the universe.

On its fortieth birthday, Sputnik can serve as a powerful reminder: If we are serious about reforming science education in our schools and colleges, we must be driven by long-term educational goals—by what we want all of our students to learn—not by the crisis of the decade. And because there are no simple solutions, we must be prepared to stick with the effort for a long time to come. Fifteen years, or twice fifteen, is simply not enough time to bring about significant and lasting changes in that vast, complicated, and incredibly disaggregated non-system called American education.



F. James Rutherford
Director

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Introducing...

Project 2061 welcomes computer specialist **Samuel Kim** to its staff. Kim most recently served as assistant editor for the *Journal of Education for Students Placed at Risk*, published by the Center of Social Organizations of Schools. Also new to the staff is **Laura Grier**, a project coordinator who is analyzing mathematics materials for their match to *Benchmarks* and the National Council of Teachers of Mathematics' content standards. She joins Project 2061 from the Quitman County Commission in Georgia.

Curriculum-Materials Evaluation Continues

Over the past months, several Project 2061 staff members have met with textbook publishers to discuss revisions to their materials. The meetings are part of ongoing work on *Resources for Science Literacy: Curriculum Materials Evaluation*, which will include Project 2061's procedure for evaluating science and mathematics curriculum materials against *Benchmarks for Science Literacy* or similar sets of learning goals. Project 2061 has also been training teachers, teacher educators, curriculum-materials developers, and others in using the procedure. In scores of workshops across the country, hundreds so far have learned to use the procedure to select materials that are likely to contribute to science literacy. *Resources for Science Literacy: Curriculum Materials Evaluation* will be available in print and electronic form in 1998.

Spanish Translation of *Science for All Americans*

Project 2061's publisher, Oxford University Press, released a Spanish-language version of *Science for All Americans* earlier this year. The Spanish version is being sold in Latin America; Mexico's Ministry of Education alone has purchased several thousand copies.

Pre-School Conference Set for February

With funding from the National Science Foundation, Project 2061 is sponsoring an invitational conference in Washington, D.C., on early childhood education in science, mathematics, and technology. The February meeting will bring together policymakers, researchers, educators, parents, and community leaders to discuss partnerships, policies, and practices. Project 2061 has commissioned papers from leading experts in areas critical to discussions of early childhood experiences and their relationship to future success in teaching and learning science.

AAAS Marks 150 Years

AAAS will launch its 150th anniversary celebration at the AAAS annual meeting February 12-17th in Philadelphia. A special exhibit commemorating the Association's history will be unveiled and the meeting will include a host of special sessions highlighting 150 years of science. The celebration will culminate with a special event on the Mall in Washington on September 20.

2061 *today*

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