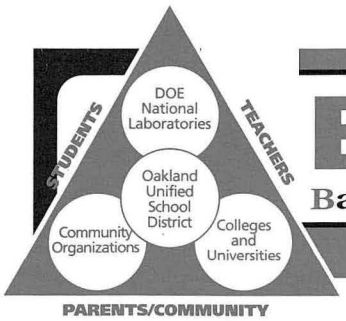


BASTEC Connection

Bay Area Science & Technology Education Collaboration

A publication for science, mathematics and technology teachers in the OUSD

Fall 1993, Vol. 4 No. 1

Science Implementation Training, a Grand Success!!

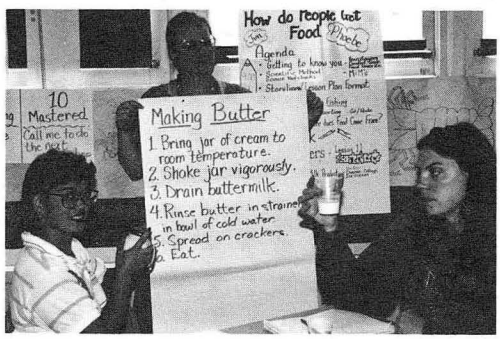
by Cathy McKay
Hawthorne Elementary

During the summer of 1993, over 70 Oakland teachers were trained in implementing the newly adopted Science Core Curriculum. The workshops were supported by a joint commitment of BASTEC and District Eisenhower funds. For one week in June, a core of 21 teachers from grades K-6 began their training by working with representatives from Full Option Science System (FOSS), Scholastic, and MacMillan Co., Inc. The participants also discussed how the State Framework and District Core Curriculum would provide a structure for presenting and using adopted materials. These trainers met twice more before August to fine tune presentation styles and plan the logistics of space usage and material acquisition.

In preparation for this and future training sessions, BASTEC purchased materials and sample texts. Kits were provided by Scholastic and MacMillan. By August 9, the core trainers were ready to begin a two-week training session for 60 more teachers who would become the leaders at their school sites.

In the intense two-week session, the trainers presented K-6 grade teachers with overviews of FOSS, Scholastic, and MacMillan, and showed how these science units meshed with the California Science Framework and District Science Core Curriculum. Dr. Carolie Sly and Marcus Martel from the Alameda County Office of Education gave presentations on constructivism and sheltered instruction, respectively. Also included were California Science Implementation Network (CSIN) strategies for overcoming obstacles to implementing the new science curriculum, kit management and unit rotation. Lunchtime options included labs in Great Explorations in Mathematics and Science (GEMS), Activities Integrating Math and Science (AIMS), bilingual, and other hands-on curriculum; and meetings with publishers whose materials supplemented what was adopted (We even had drawings for freebies!). Participants were also able to choose mini-workshops.

During the second week, teams began planning site presentations using strategies learned in the first week sessions. These teams were then able to go out and train other schools . At the conclusion of the session, they presented a written plan for the October 1 training day. In mid-September, the participants met to discuss logistics, pick up training kits, and to plan a skeleton agenda for that day, so that training district-wide would be consistent. Ninety percent of the elementary schools were served on October 1. Schools not trained that day will have the opportunity for training during the school year. Plans are also in the works for further support training once teachers have begun using adopted science materials .



Trainer, Phoebe Diamond, presenting scholastic unit, "How People Get Food."

Reactions of teachers who participated in the workshops were very positive. They reported feeling supported both professionally and financially. Becoming a part of the training team means belonging to a network of colleagues who are supportive and enthusiastic about teaching science. It also connects them with a network of resources for materials and ideas. Participants felt so strongly about this connection that they wouldn't leave the workshop until they had the name, school, and phone number of each participant. The teams are looking forward to a great first year of implementation of both the District Core Curriculum and adopted science materials. This is only the beginning of an innovative process that will benefit both teachers and students in future science education in the OUSD. ▲

The Science Core Curriculum

Achievement and Challenge

by Beth Napier
Chabot Science Center

Congratulations on a job well done! At its August 25, 1993 meeting, the Oakland Board of Education unanimously adopted the Science Core Curriculum developed by Oakland Unified School District (OUSD) teachers and other BASTEC members during the summer of 1992.

In a series of workshops which began in the spring of 1992, OUSD elementary and middle school teachers came together with parents and scientists to address the need for a District-wide, articulated science curriculum as recommended by the new California State Science Framework and to anticipate the upcoming science text adoption year. Supported by OUSD and BASTEC, and guided by Dr. Helen Quinn, Stanford Linear Accelerator Center (SLAC), these Saturday workshops allowed all parties to contribute to the development of an action plan and lists of basic skills expected to be mastered by students at each grade level.

During a two-week work session in June 1992, Oakland teachers continued the project. The elementary teachers (K-6) led by Chris Pickerell, Phoebe Diamond, Cathy McKay, and Cora Catangay, designed a matrix curriculum outline and included samples of related activities. To obtain copies of these sample activities, send a postcard with your name and school address marked, "ACTIVITIES" to: Dr. Helen Quinn; Stanford Linear Accelerator Center; PO Box 4349; Stanford, CA 94309.

The middle school and junior high school teachers, led by Jeff Manker, focused on grades 7 and 8. Having determined that science should be a required subject both semesters for both years, this group developed an ideal two-year curriculum sequence. With the adoption of the curriculum document, this requirement has now become the new District policy. Realizing that it may take some time before this policy is fully implemented in all middle and junior high schools, BASTEC's Curriculum Committee plans to continue to work with middle school teachers and principals to make this policy a reality throughout the OUSD.

The high school group (9-12) was comprised of teachers from most of the high schools in the District. Led by Beth Napier, these teachers modified the sequence in which most students take science courses, added new science electives, and designed a required, two-year integrated science course built around the study of the human body. In consideration of the amount of work necessary to prepare both teachers and students for such a science course, all ninth grade teachers were asked to meet in order to review the recommendations. It was decided at that meeting to omit the integrated science course from the Core Curriculum until a future date.

Much work remains to be done in order to implement the new Science Core Curriculum; nonetheless, congratulations are in order for all those who participated in this process and helped to bring OUSD to the forefront of science curriculum development in California. Already, teachers and administrators from other districts are asking to use our Science Core Curriculum as a model for their own curriculum development. The BASTEC newsletter will continue to update teachers and provide further information about our new Science Core Curriculum. ▲

Special Thanks

One person, very important to the entire curriculum process, deserves full recognition for her unswerving direction, her unstinting contributions, her unflagging sense of humor and her oft demonstrated respect for classroom teachers. Dr. Helen Quinn a theoretical physicist at SLAC, was an ever present, behind-the-scenes, driving force that kept the curriculum development project moving forward in the face of all obstacles. As the author of the introductory part of the curriculum, Dr. Quinn eloquently identified the connections between the State Science Framework and the mission of OUSD, recommended minimum hourly requirements for science study, and developed a workable curriculum reform timetable. In addition to all this, Dr. Quinn also provided an outline to the major themes of the State Science Framework in a readable and easy-to-comprehend manner. Dr. Quinn attended all District meetings whenever the Core Curriculum was discussed. She never failed to support and advance the cause of teachers in her efforts to have the curriculum adopted.

Beth Napier

THE BASTEC RESOURCE CENTER

by Cathy McKay
Hawthorne Elementary

After a summer of reorganization, the BASTEC Resource Center opened September 7. Arnita Sewell and Vic Miloslavich will be staffing the Center this year as part of an early retirement incentive program. Arnita was a teacher at Maxwell Park and will be the Coordinator for the Resource Center for 1993-94. Vic taught at Brewer Middle School, and was responsible for setting up and organizing the Resource Center this summer. He will fill in as needed during the school year.

The Resource Center has a variety of curriculum materials and books available for check-out. These include models, equipment, videos, books, curriculum guides from Great Explorations in Mathematics and Science (GEMS), Activities Integrating Mathematics and Science (AIMS), and much more. Some books, posters, iron fillings, diffraction grating, glassware, paper cans with lids, etc., are available at no charge. MECC software copying is accessible by phone appointment.

Science adoption related materials such as consumables and kits are still being gathered. Consumables for most Scholastic kits are already at the Resource Center. FOSS consumables will not be available until later in the year.

The Resource Center has a list of the science kits each school site has purchased. Be prepared as some consumable kits are quite large, and some are very heavy,(i.e. the rocks for the Earth Materials unit).

Extra kits are available for checkout by:

1) science adoption training team members who need them for inservices,
2) Special Education teachers who received science adoption training on September 25 at Chabot Science Center, and
3) small schools who have purchased a minimum number of kits. Please check with Dale Koistinin.

Business is already brisk. The BASTEC Resource Center looks forward to serving the teachers of the Oakland Unified School District.

The BASTEC Resource Center is located at

CHABOT SCIENCE CENTER
4917 MOUNTAIN BLVD.
OAKLAND, CA 94619
Open Tuesday, Wednesday, and Thursday
3:30- 5:00
531-4560 531-5906 FAX 836-8470

Taking a Walk through our Solar System

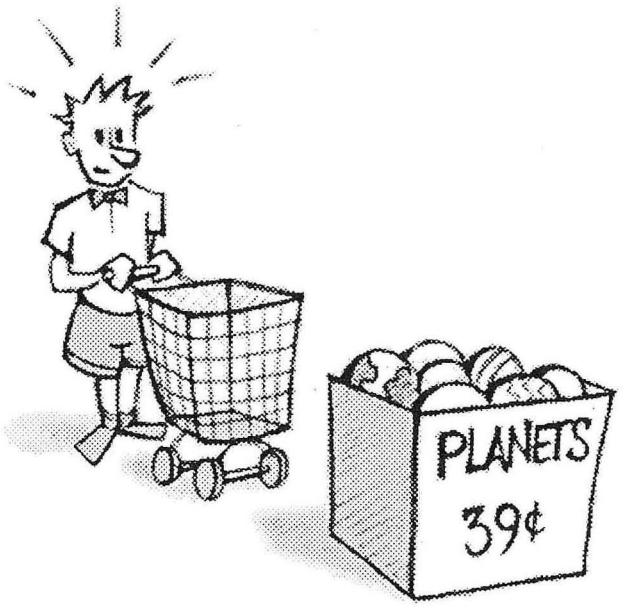
Trying to understand the relative sizes and distances of the planets in our solar system can be very difficult for learners of any age.

For example, the planet Jupiter is approximately 483 million miles from the sun, and about 470 million miles from the Earth. Its diameter is 89,000 miles.

SOUNDS CONFUSING? TRY THIS!

If the sun were the size of a ping pong ball, Jupiter would be the size of a large mustard seed and would be located about 26 footsteps from the sun. The Earth would be 5 footsteps from the sun. Make it a little easier? That's what this activity is designed to do.

Take a walk with the class using the chart on the opposite page for assistance.



Helpful Hints:

1. Walk off the distances before you take the class.
2. Put each of the planet models on an index card or piece of paper.
3. Select a student to be each planet.
4. Make quick and easy banners for each planet by writing the name of the planet on a piece of construction paper.

Scale Model of the Solar System

1 centimeter = 54,000,000 kilometers

Planet	Size*	In model	Material	Distance** from sun	In model***	Steps from the Sun	Steps from the last planetary object
Sun	1391040	4.32	ping pong ball	0	0	0	0
Mercury	4830	0.20	grain of sugar	58	183	2	2
Venus	12075	0.40	grain of sugar	108	335	3 1/2	1 1/2
Earth	12880	0.40	grain of sugar	150	472	5	1 1/2
Mars	6440	0.20	grain of sugar	229	716	8	3
Jupiter	143290	0.46	mustard seed	778	2438	26	18
Saturn	120750	0.38	mustard seed	1426	4511	49 1/2	23 1/2
Uranus	46690	0.15	peppercorn	2871	4511	99	49 1/2
Neptune	45080	0.14	peppercorn	4487	13838	151 1/2	52 1/2
Pluto	3220	0.10	grain of sugar	5909	18654	204	51 1/2

* Approximate diameter in kilometers

** Average distance in millions of kilometers from the sun

*** Centimeters

In point of fact, Pluto is now closer to the sun than Neptune in its current position in its elliptical orbit. It will again become the furthest planet from the sun in 1999, as it was before 1979 when it became the eighth planet.

The closest known star to the sun is Alpha Centauri. It is approximately 1,300,000 km across and 4×10^{13} km from the Earth. In the model, the star would be ping pong ball and its distance from the sun would be 1,250 km. This is about the distance from Oakland to Denver.

Reproduced with permission from Lawrence Hall of Science Hall of Science Planetarium Activities for Student Success (PASS).

Special thanks to JohnMichael Seltzer and Tim Aaronson.

BASTEC Participants

Oakland Unified School District
Lawrence Hall of Science
Department of Energy National Laboratories:
- Lawrence Berkeley Laboratory
- Lawrence Livermore National Laboratory
- Sandia National Laboratory/California
- Stanford Linear Accelerator Center

Colleges and universities:
- CSU Hayward
- Holy Names College
- Laney College
- Samuel Merritt College
- UC Berkeley/MESA

Other organizations:
- Alameda County Soviet Exchange Studies
- Chabot Science Center
- Interface Institute
- National Organization of Black Chemists and Chemical Engineers
- East Bay Computer Using Educators
- African Scientific Institute
- USDA Forest Service
- East Bay Consortium
- American Association of University Women
- Edna McConnell Clark Foundation - STRETCH
- ACCESS
- Project SEED

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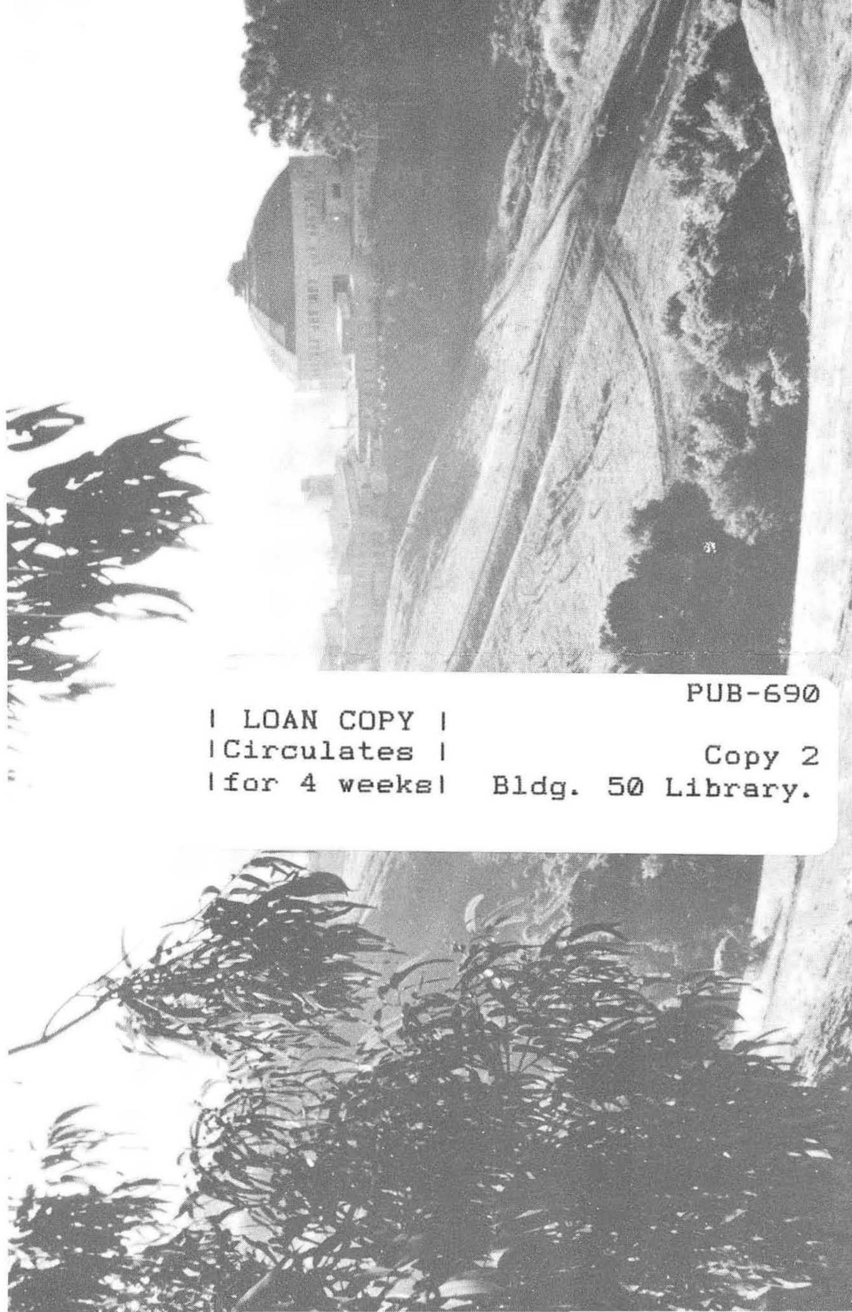

Lawrence Berkeley Laboratory
Archives and Records

- Bevatron (1954), used to discover the antiproton and one of the most prolific high-energy accelerators in particle physics. When linked to the Super Heavy Ion Linear Accelerator (HILAC), the Bevatron becomes Bevalac to accelerate any element on the periodic chart to relativistic energies.
- Bubble chamber particle detector and data reduction system (1957).
- Discovery of radioactive elements, including Berkelium, Lawrencium, and Californium, and the discovery of production of particle states.
- Continued advance of nuclear medicine, including stereotactic radiosurgery and environmental cancer research.
- Invention and use of positron-detecting scintillation camera (by Hal Anger), for tracking biological radiotracers.
- Detection and treatment of disease using radioisotopes and particle beams.
- Mapping the process of photosynthesis.
- Invention and use of a special detector to discover the extent of meteoric collisions, leading to the detection of an iridium layer linked to the die-out of the dinosaurs.
- Design and planning of the Superconducting Super Collider (SSC), the world's most powerful accelerator.
- Development of the Advanced Light Source (ALS), generating brilliant laser-like beams of the ultra-violet light and x-rays for probing atomic and cellular structures.
- National Center for Electron Microscopy, pioneering electron imaging techniques and devices for use in the physical and biological sciences.
- Invention of the Keck Ten Meter Telescope, the world's largest optical telescope, constructed atop Mauna Kea and functioning as a single giant mirror to view galaxies 10 billion light-years away.
- Electron Cyclotron Resonance ion source (ECR), using hot electrons in a magnetically controlled plasma to study the forces that shape atomic nuclei.
- The Human Genome Project, mapping and deciphering the genetic code of human DNA.
- Research and development of new semiconductors and superconductors.
- Improved flourescent lighting systems.
- Development of a special seismic monitoring system.
- Using the University's Leuscher Observatory, conducting a computer-search and photodocumentation of galaxies in the quest for recent supernovae and Nemesis, the proposed companion star to the sun.
- Positron emission tomography for radiotracer study of tissue absorption and disease development.
- The Time Projection Chamber, designed to determine the positron of subatomic particles from faint signals, at the PEP, the electron-positron colliding beam ring (a collaborative LBL-SLAC project).

Address

Lawrence Berkeley Laboratory
Archives and Records, Bldg. 69
1 Cyclotron Road
Berkeley, CA 94720
(415) 486-5525

Hours

Monday through Friday 8:30 – 4:30

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