

Science Education

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DASH & FAST Continue to Receive National Recognitions

by Carol Ann Brennan, Mary Gullickson, John Pauls, Lori Ward, and Don Young

In recent months, both *DASH* and *FAST* have been honored with important recognitions and have been showcased at state and regional conferences. Among the honors:

- *DASH* and *FAST* were identified as two of five science programs in *Results-Based Practices Showcase 1997-1998* (1997), a catalog of effective programs assembled after a nationwide search by the Kentucky Department of Education.
- *DASH* and *FAST* were listed as two of three research-based, effective science-reform models in the *Catalog of School Reform Models* (1998), the culmination of a nationwide search by the Northwest Regional Educational Laboratory (NWREL) for the U.S. Department of Education.

The Kentucky Showcase of Results-Based Practices

Kentucky's Department of Education has spent the last 6 to 8 years renewing its school system. As part of that effort it formed a team in spring 1997 to identify programs that would align with its goals for improvement. The approach was to find programs that could show sustained significant results (hence the term "results-based instructional practices"), to describe those programs in "profiles," and to feature presentations of the programs in a two-day conference called the Kentucky Showcase. *DASH* and *FAST* were two of only 53 programs in all subject areas that made it through the team's intensive scrutiny and to the showcase. For an idea of the significance of this recogni-

tion, consider the following:

- The Kentucky team contacted over 500 projects, including those from the now extinct National Diffusion Network, the National Science Foundation, professional associations, publishers, and others.
- No professional association could identify even one program that could show results.
- Of the 500, only 64 programs showed results that passed the initial screening; 90% did not.
- Of those 64, only 53 passed the final panel scoring and reached publication in the Kentucky Showcase list.

The Kentucky team first learned about CRDG's science programs through the Great Plains Curriculum Showcase, sponsored by The Nebraska Math and Science Initiative and The High Plains Consortium at McREL in August 1997. Science coordinators from all fifty states attended the Showcase in Omaha, featuring *DASH* and other NSF-funded mathematics and science programs.

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Catalog of School Reform Models

In November 1997 Congress appropriated \$145 million more to state education agencies to improve students' achievement by reorganizing and revitalizing entire schools. Called the Comprehensive School Reform Demonstration (CSRSD) program, the initiative makes \$120 million available to Title I schools and \$25 million for other schools through competitive grants of no less than \$50,000 a year for up to three years.

To find helpful models, the U.S. Department of Education contracted with NWREL to identify and describe programs that met extensive criteria and hence showed promise of making a difference in students' achievement. The resulting *Catalog of School Reform Models* contains introductory information on models in two categories: entire-school models, and skill-and-content models. Both *DASH* and *FAST* are included in the second category. The criteria for selection, specified in the law, are familiar to educators who have been following national science education reform and standards. To be included, programs must include in a coherent fashion the following nine components:

- effective, research-based, replicable methods and strategies
- professional development
- measurable goals and benchmarks
- support within the school
- parental and community involvement
- external technical support and assistance
- evaluation strategies
- coordination of resources

Additional Showcasing

The idea of featuring exemplary programs in a conference setting has been catching on. Last summer's Great Plains Curriculum Showcase was the first national show. Since then, the National Science Foundation, regional service centers, and state departments of education have held other showcases. Among the ones that have included *DASH* and *FAST* are these:

National Science Foundation

Appalachian Region Instructional Materials Showcase

Charleston, WV March 1998

Co-sponsored by the NSF-funded Appalachian Rural Systemic Initiative (ARSI) and

Coordinated and Thematic Science (CATS). This showcase also included CRDG's *Algebra I: A Process Approach* program.

Mid-Atlantic NSF Curriculum Showcase

Harrisburg, PA July 1998

Co-sponsored by the Mid-Atlantic Eisenhower Consortium for Mathematics and Science Education and Research for Better Schools (RBS)

Texas Curriculum Showcase

Austin, TX November 11–13, 1998

Co-sponsored by the Texas Statewide Systemic Initiative

CSRSD Showcases

Charlotte, NC August 1998

Sponsored by Southeast Regional Vision for Education (SERVE)

Honolulu, HI June 1998

Co-sponsored by the Hawai'i Department of Education and Pacific Resources for Education and Learning (PREL)

Detroit, MI October 1, 1998

Best Practices Fair
Co-sponsored by the Technical Support Consortium and Schools of the 21st Century Initiative

Other Upcoming Exhibits

DASH and *FAST* will appear at the following showcases this fall.

October 1998

California Science Teachers Association (CSTA)
October 8–11 San Jose, CA

National Council of Teachers of Mathematics (NCTM) and School Science and Mathematics Association (SSMA)

October 14–16 Louisville, KY

Hawaii Science Teachers Association (HaSTA)
October 24 Honolulu, HI

National Science Teachers Association (NSTA)
October 28–31 Seattle, WA

November 1998

National Middle Schools Association (NMSA)
November 3–7 Denver, CO

Kentucky Science Teachers Association (KSTA)
November 5–7 Lexington, KY

Oregon Goals 2000 Partners Fair
November 9 Corvallis, OR
Sponsored by the Oregon Department of Education

National Science Teachers Association (NSTA)
November 18–21 Birmingham, AL

December 1998

National Science Teachers Association (NSTA)
December 2–5 Albuquerque, NM

Awards & Accolades

Congratulations to Presidential Award winner Jean Buller. Jean is a grade 4 *DASH* instructor in the Walled Lake school district in Michigan.

Katylee Hoover, a *DASH* instructor in Greensboro, North Carolina, received an Einstein Educator fellowship to work at the National Science Foundation. Well done, Katylee!

Dr. Jim Gallagher, Michigan State University consortium partner, received an award for Distinguished Contributions to Science Education through Research from the National Association for Research in Science Teaching (NARST). This is NARST's highest award. In addition, Jim has been named a co-editor of the *Journal for Research in Science Teaching*. Congratulations, Jim!

Jim Zullinger and the Rowland Laboratory School Staff at Shippensburg University, PA were featured in an article in the September 1998 issue of *Parents* magazine. The article, "How Kids Learn Best," by Liz Rusch describes eight programs, including *DASH*, "that offer solid proof of their success in the classroom." The lead photo shows Rowland 4th graders doing the mechanical digestion activity. Way to go!

Krasnoyarsk Success Story

by Francis M. Pottenger III

In June, Frank Pottenger, principal investigator/writer, and Mark Hanington, principal trainer/writer, along with Hawai'i teachers Elizabeth Yng-Wong and Pam King, attended a three-day international civics conference in Krasnoyarsk, Russia, to report on the new project Civic Education for the Information Age (CEIA). The conference, jointly sponsored by the Russian Association For Civic Education and Krasnoyarsk State University, brought together a multinational group of educators to describe, discuss, and analyze efforts to develop civic education for Russian schools.

Since the breakup of the Soviet union, a number of international bodies have shown interest in training Russian teachers to understand democratic institutions. But the CEIA project goes a step beyond training. Through CEIA, University of Hawai'i educators have been working with a team of Russian educators under the leadership of Dr. Isak Froumin of Krasnoyarsk State University and Dr. Alexander Uvarov of the Russian Academy of Science, Moscow, to conceptualize and produce prototype units for a new Russian civics curriculum targeting grades 9–10.

Work on CEIA has been supported by the United States Information Agency (USIA). CEIA was conceived as a research project to determine the potential of new strategies for teaching civics in countries with differing political traditions. These strategies call for students to view topical and historical examples of social interaction through the eyes of

practitioners, politicians, landowners, industrialists, lawyers, citizens, and others while applying the methods of the social sciences to gain meaning. Through these studies, students construct an understanding of government and society and encounter the lifelong task of maintaining, renewing, and where needed, rebuilding the civic structures of local, national, and global communities. The Russian Ministry of Education has evaluated the project and found it very successful.

Following the conference, a two-day workshop was held with Russian CEIA team members to review progress:

- Lucia Litvinceva presented her unit on the Chechnya war.
- Elena Prigodich reviewed her unit related to law and government.
- Anya Dorokhova detailed her unit examining ways that modern Russian society uses mediators.
- Eugene Khodos told about his unit on skills needed for understanding civics.
- Svetlana Lisina went over her unit on labor.
- Tatiana Lovchik explained her unit on deserters from the army, using the case of a young draftee, a former student of hers, who deserted and was put on trial for desertion.
- Slava Bashev reported on his work on students and schooling.

In discussing their experience using the CEIA model, the Russian team made these observations:

- As teachers, they experienced profound changes in their own attitudes to and understanding of teaching. For example, Svetlana Lisina, a university professor, reported that she now has trouble lecturing, recognizing that lecturing is rarely the most effective way of communicating.
- Almost all students made significant progress in developing skills such as interviewing, analyzing documents, working collaboratively, and so on.
- Outside observers in classes have been impressed with the fluency with which students use “working notions” in developing formal definitions and with students’ comfort in using documents, laws, and terminology relevant to their topics.
- Students are now much more aware of the workings of their society. Svetlana Lisina noted that while democracy was not formally taught in the class, students became much more aware of democratic functions in the world around them.

Frank Pottenger said, “Standing back from our work and listening to our Russian colleagues describe the curricula that they designed using this model, I can say that in my 33 years of working at curriculum development I have never seen more rigorous conformity to the intent of a model. The results have been stunning, transforming teaching practices and the attitudes of students precisely as the model was intended to transform them. Missing now is the conceptualizing and building of a total curriculum which can fully exploit the model.”



Some New Ideas in Staff Development

DASH by Carol Ann Brennan

DASH Cross-Level Institutes

Our first new idea for staff development grew out of work begun last year in St. Louis on *DASH* cross-level institutes. These sessions were designed for certified *DASH* teachers assigned to a grade for which they hadn't been *DASH*-certified. Last summer we piloted three-day sessions in kindergarten through grade 3. When we ran these sessions again this summer, we got an enthusiastic response. A big thank you to St. Louis instructors Mary Barnum and Sue Geiseke for their hard work in readying these new designs for wider use.

In June, Diana Robben and Carol Brennan piloted cross-level sessions in grades 4 and 5. Because of the expanded content, these sessions ran for five full days. Participants were pleased with the sessions. A questionnaire will give us additional information about their effectiveness and help us revise the sessions for next summer.

DASH Jump Start

Blue Valley and Olathe, Kansas, gave us the opportunity to try a brand-new idea at the end of August. This *DASH* jump-start session was designed to give newly hired teachers enough background and activities in *DASH* to get them through the school year with the help of a mentor, an experienced *DASH* teacher, so as to preserve program continuity for their students. Charlotte MacDonald and Carol Williamson gathered 35 kindergarten, first-, and second-grade teachers for an all-day Saturday session. We covered a lot of territory with the able assistance of Kansas *DASH* instructors Denise (Sloan) Kidder, Jami Craig, and Lila Courtney. The participants gave us some thoughtful suggestions that will help us revise this new model.

A big mahalo to the *DASH* instructors and participants who helped us work through these new *DASH* staff development models.



SUMMERTIME IN HAWAI'I

by Sandra Shimabukuro

Teachers on the islands of Hawai'i, Maui, Kaula'i, Moloka'i, and O'ahu took part in *DASH* institutes this summer. We also welcomed participants Louis Lafasciano from Vermont and Tulensru Waguk, Ronnie Tolenna, Frazier Albert, and Lipton Tilfas from Kosrae.

Our instructors this summer were Lani Carson, Brooke Davis, Cathy Kalehuawehe, Donna Kohara, Gail Kuba, Julie Matsushima, Diane Mokuauu, Dorie Parubrub, Sharon Souza, Susan Tarumoto, John Thatcher, and Donna Therrien. We thank them for their commitment and support.

DASHING Through the Summer on the Mainland

by Carol Ann Brennan

DASH had another hustle-bustle summer. Sessions were held in Greenville, North Carolina; Ascension Parish, Louisiana; St. Louis, Missouri; Pittsburgh, Pennsylvania; Syracuse, New York; Olathe and Topeka, Kansas; Barnet and Fairhaven, Vermont; and Escanaba, Michigan,

Welcome aboard to our newly certified *DASH* Instructors:

Michigan	Karen Salmon, 5, Gina Zanon, 4
New York	Kathy Gosh, 4
New Hampshire	Beth Mayette, 4
Pennsylvania	Karen Murphy, 5
Vermont	Ann Ellis, 5, Susan Jensen, K-1, Donna Stark, 5

Congratulations to you, and a special thank you to the local coordinators, staff instructors, and others who worked with us.



Food from ARF to the Pyramid

by Francis M. Pottenger III and Carol Ann Brennan

Coming up with a food-grouping system that young children can understand and use is a challenge. Young *DASH* students seem to grasp the World Health Organization's scheme of three food groups linked to major functions in the human body: *activation*, *regulation*, and *fabrication*. These ideas are introduced in kindergarten. Grade 1 students learn about the ARF Food Group System through song, rhyme, and aphorism. (See Figure 1.) In grade 2, students learn the basic components of foods: fats, carbohydrates, proteins, and vitamins and minerals. In grade 3, they learn about the recommended number and size of servings.

In the ARF system, *A* stands for foods that *activate* the body, giving it energy to make it go. These include complex carbohydrates, fats, and sugar. Complex carbohydrates come from starches such as breads, cereals, rice, and pasta. *R* stands for foods (including vitamins and minerals) that help *regulate* how the body works. *F* stands for foods, mainly proteins, used to *fabricate*, or build and repair the body. Figure 2 shows the ARF Food Group System on a wheel.

Because few foods consist of only one component, the diagram shows that foods may be *simple*, containing mostly one component, or *compound*, containing large amounts of two or more components. For example, a compound food containing simple activation and regulation foods (ACT/REG) could be a fruit pie or a lettuce-and-tomato sandwich. Figure 2 shows this refinement, along with the recommended number of servings.

In the ARF diagram in Figure 2, you can use color to highlight the combining of *simple* foods to produce *compound* foods. One way is to color activation foods *yellow*, regulation foods *blue*, and fabrication foods *red*. Next color the activation and regulation (ACT/REG) section *green*, the compound regulation and fabrication section (REG/FAB) *purple*, and the fabrication and activation section (FAB/ACT) *orange*. Color the all-inclusive foods in the center (ACT/FAB/REG) *brown*.

The ARF Food Group Song

Activation, activation,
Makes me move, groove and move.
Potatoes, rice, and shredded wheat,
Butter, bread, and candy sweet,
Activation foods,
Activation foods.

Regulation, regulation,
Makes me work, perk and work.
Spinach, corn, and cauliflower,
Apples, raisins, fiber power,
Regulation foods,
Regulation foods.

Fabrication, fabrication,
Makes me grow, repair and grow.
Beans, chops, and turkey legs,
Milk, fish, steak, and eggs,
Fabrication foods,
Fabrication foods.

(Sing to the tune of *Are You Sleeping*.)

The ARF Food Group Rhyme

Grains and butter, a sourdough roll,
Potato and sugar, cereal in a bowl.
These are foods for activation.
For crawling and climbing, getting all hot,
For running and jumping, turning on a dot.
Making bodies move is activation.

Spinach and cauliflower, corn on the cob,
Apples and oranges, pureed peaches in a glob.
These are foods for regulation.
For digesting and defending, controlling things inside,
For seeing and thinking, directing what's supplied.
Making bodies work is regulation.

Steak and beans, roasted chicken legs,
Milk and codfish, ham served with eggs.
These are foods of fabrication.
For building and maintaining, making muscles strong,
For repairing and growing, making bone that's long.
Making bodies grow is fabrication.

ARF Aphorisms

Eat the group of three
In wide variety.

When selecting foods in the right amounts,
Remember the ARF serving counts.
We need at least 6 servings of A and 5 of R,
And 4 of F to be up to par.

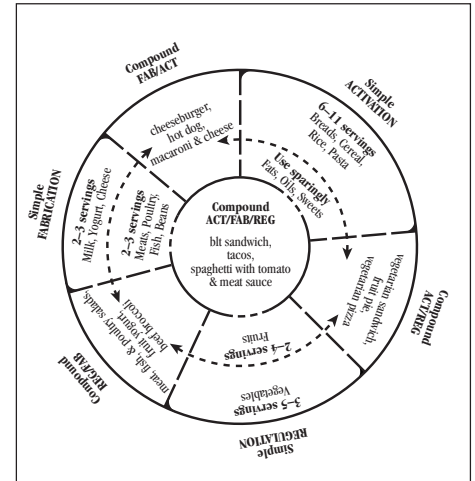


Figure 2. ARF Food Group System

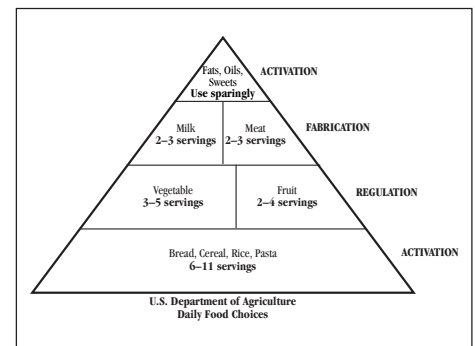


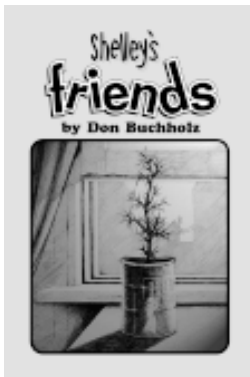
Figure 3. Food Pyramid

In grade 4, *DASH* introduces the Food Pyramid put out by the United States Department of Agriculture. (See Figure 3.) With it comes the conceptual problem of rationalizing two disparate systems. This problem is resolved when youngsters see that the Fabrication foods include both the dairy and the meat, fish, and poultry groups of the Pyramid. The Regulation group contains both the fruit and vegetable groups of the Pyramid, and the Activation group contains the Pyramid's carbohydrate group and its fat and sugar groups. To help in this recognition, *DASH* shows the Pyramid's groups as subcomponents in the ARF diagram.

Using the coloring scheme of the ARF wheel on the Pyramid (Figure 3) can show

CRDG Offers More Titles In A NEW CONTEMPORARY FICTION Series

by Don Buchholz



NEW CONTEMPORARY FICTION for ages 9 and up continues a series begun with *Chris's Story* and its back-to-back companion, *Bob and Paula's Story* (CRDG, 1994), offering present-day readers fast-paced, exciting, and meaningful stories with identifiable and likable characters. They're about kids today, their hopes and dreams, their concerns and fears. NEW CONTEMPORARY FICTION encompasses a broader world as well, including grownups as main, secondary, or ensemble characters—parents and teachers, school principals, bus drivers, paramedics, radio deejays and television reporters, politicians and police officers.

Living in Today's World

The stories in the series are about today, about making and losing friends, about belonging and being lonely, about dangers and drugs, family expectations and peer pres-

ures, about the far-reaching consequences of a single violent act, about anger and prejudice and acceptance and trust. While most of the stories are grounded in reality, others touch on fantasy; some are whimsical, some dead serious, some wild slapstick.

Bringing Contemporary Issues into the Classrooms

Books in the NEW CONTEMPORARY FICTION series are entertaining without being shallow, and educational without being pedantic. Teachers looking for ways to introduce contemporary social and health issues into the classroom and to provide a foundation for discussion will find in this series a wealth of ideas as well as stories that will draw kids in and hold them. The books can be used as individual or class readers, as read-alouds, for role-playing and class drama presentations.



Discussion Questions and Activity Suggestions

All books in the series come with outlines and chapter synopses, age- and grade-appropriate discussion questions, and suggestions for classroom springboard activities.



More Information

Contact the CRDG Dissemination office to request a brochure describing the NEW CONTEMPORARY FICTION series.

Call 1.800.799.8111 or e-mail crdg@hawaii.edu.



Classroom Electronic Portfolio Series

FOR DASH



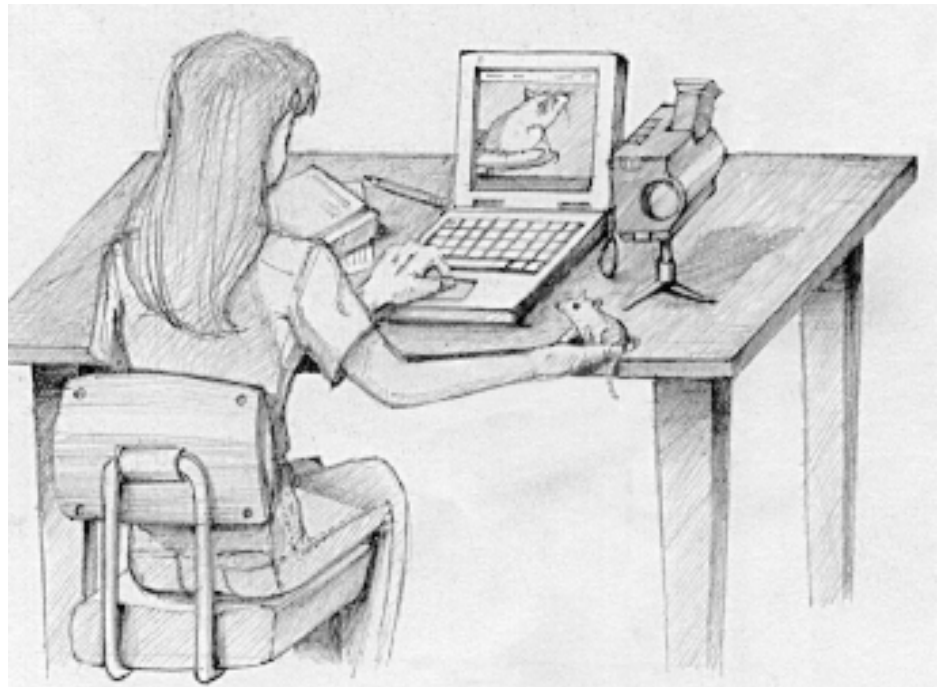
FAST



HMSS



& ALL CLASSROOMS



The **Classroom Electronic Portfolio Series**, developed at the Curriculum Research & Development Group of the University of Hawai'i, gives teachers assessment avenues that reflect the richness of a student's repertoire of concepts, skills, and accomplishments. Teachers and students can now create, store, retrieve, and arrange multimedia versions of students' presentations, accomplishments, inventions, and discoveries quickly and easily. The **Classroom Electronic Portfolio Series** is also an ideal format for "showing off," as it provides students, teachers, parents, and administrators easy access to track, review, assess, and display student work.

The **Classroom Electronic Portfolio Series** has five separate programs on a single CD.



Automatic Interviewer poses a series of questions to the student and makes a digital movie of the answers, which may include speech, movement, demonstrations, etc. Playback is by individual, by question, or by all the population's responses to all questions.

Parents and visitors can even be added to the mix on open house night—or any time they drop by.



Class Pictures and **Class Data** facilitate rapid incorporation of pictures of students and their research data into organized electronic form. Photos and illustrations can be accompanied by text to be viewed on-screen or printed. Audio annotation adds to on-screen documentation.



Class Show lets students quickly and easily create multimedia booklets containing text, graphics, and sound. Automatic indexing keeps student work organized and easily accessible to both student and teacher.



The **Class Portfolio** is the capstone

program of the Classroom Electronic Portfolio Series. The Class Portfolio combines student self-assessment with multimedia evidence booklets that the students create. All are organized within what looks like a teacher's record book. Teachers can see at a glance how students are doing, and they are a click away from an electronic evidence booklet.

Think of the **Classroom Electronic Portfolio Series** as a blank teacher's record book that can be filled with student-created evidence of what a student knows and how the learning took place. Teachers in every subject area will find **Classroom Electronic Portfolio Series** invaluable as a way of organizing and displaying a wealth of student work in multiple formats.

Contact the CRDG Dissemination Office at 800.799.8111 or email crdg@hawaii.edu for purchasing information. The cost is \$480 for a school license, which allows the program to be used anywhere in the school.

A Very FAST Summer!



by Mary Gullickson



This year *FAST* had one of its busiest and most exciting summers ever. With the program's close alignments to both national and state standards, *FAST* is growing by leaps and bounds. Among its newer accolades, *FAST* has been

- identified as one of five effective science programs in *Results-Based Practices Showcase 1997-1998* (1997), a nationwide search by the Kentucky Department of Education.
- identified as one of three research-based, effective science-reform models in a nationwide search by the Northwest Regional Educational Laboratory for the U.S. Department of Education's *Catalog of School Reform Models* (1998).

FAST 1 institutes were held in Owensboro, KY; Charlotte, NC; St. Louis, MO; Honolulu, HI; Wake County, NC; Pittsburgh, PA; Gray-New Gloucester, ME; Mountlake Terrace, WA; Homewood, IL; Mayfield, OH; Manteca, CA; Reading, PA; and Fayetteville, NC.

FAST 2 institutes were held in West Seneca, NY; Charlotte, NC; Honolulu HI; Akron, OH; Bethel Park, PA; Mountlake Terrace, WA; St. Louis, MO; Mayfield, OH; Aurora, IL; and Fayetteville, NC.

FAST 3 institutes were held in Cleveland, OH; Wake County, NC; Mountlake Terrace, WA; and Fayetteville, NC.

FAST also certified more potential instructors than ever before. We welcome these dedicated, hard-working folks to our ever-growing family of *FAST* certified instructors.

FAST 1

Jim Sorteberg from Ramsey, MN, traveled to Hawai'i for instructor certification. Jim is an experienced, fun-loving middle-school teacher whose strengths include knowledge, patience, and love for children of middle-school age. Jim is wonderful to work with, is very organized, and has a great

sense of humor.

Tyra Shimabuku, from our own University of Hawai'i Laboratory School, also attended the Honolulu institute. This is her third year of teaching, and her energy and enthusiasm contributed to the success of the institute. Tyra has a degree in marine science from Hawai'i Pacific University. We are fortunate to have her on board.

Bruce Randall attended the Pittsburgh institute with Tom Scarlett. Bruce is a leader at Bethel Park High School whose strengths include organization and collaboration with others. He has a master's degree from Duquesne University. We are happy to add a *FAST*-certified trainer to the Pittsburgh area.

FAST 2

Laurie Schonert, from Rim of the World High School in Lake Arrowhead, CA, attended our *FAST 2* institute in Honolulu. Her celebration of learning and teaching was rejuvenating to all participants. Having recently received her master's degree, she is continuing her education in every possible avenue, from assessing state tests to taking additional classes.

Tyra Shimabuku also attended the Honolulu *FAST 2* institute. Together, the *FAST 1* and *FAST 2* institutes ran for four straight weeks, including Saturdays and Sundays. Tyra's smile and her enthusiasm never waned. We are proud of her tenacity.

FAST 3

Ruth Martin was certified as a *FAST 3* trainer in Mountlake Terrace, WA. Ruth is an award-winning teacher whose fresh inventive ideas exemplify the ideas of "teacher as researcher" and "teacher as lifelong learner." Ruth's experiences in micropaleontology, in which she has a master's degree, added some surprising dimensions to the institute.

Congratulations to all, and thank you for your dedication, hard work, and passion for learning.

Science Software



Join Archimedes in the laboratory to explore relationships of mass and volume. Learn about applications of buoyancy and density in the laboratory and in the Archimedes Space Station.

Designed to complement Physical Science investigations in *FAST*, Archimedes Laboratory consists of a series of interactive simulations that help students to expand and apply their understanding of mass, volume, density, and buoyancy.

The software was developed in collaboration with the Laboratory for Telecommunications Education, Russian Academy of Sciences, Scientific Council of Cybernetics. It can enhance any science course that deals with relationships among these concepts.

It can be used as

- a tutorial to help students grasp these important relationships,
- a set of investigations for demonstrating and extending students' understanding,
- a problem-solving environment where students work on assigned tasks, and
- a creative environment for students to invent situations and manipulate variables.

Archimedes Laboratory I, Version 1.0, including site license for duplication Macintosh or MS DOS Windows, \$99.00 For further information, phone the CRDG Dissemination Office at 1.800.799.8111.



Ruth Martin is certified as a *FAST 3* Trainer

Meeting the Pacific Standards in Science in Kosrae, Federated States of Micronesia

by Mary Gullickson

The Pacific Mathematics and Science Regional Consortium was formed in 1992 with funding from the U.S. Department of Education's Dwight D. Eisenhower National Program for Mathematics and Science Education. Headquartered at Pacific Resources for Education and Learning (PREL) in Honolulu, the consortium brings together PREL, the CRDG, the Moanalua Gardens Foundation, and the education departments of the region's ten entities: American Samoa; the Commonwealth of the Northern Mariana Islands; the Federated States of Micronesia (Chuuk, Kosrae, Pohnpei, and Yap); Guam; Hawai'i; the Republic of the Marshall Islands; and the Republic of Palau.

One of the consortium's first tasks was to devise standards for excellence in mathematics and science education for the Pacific region. The team published these standards in 1995. Now efforts are under way to transform these standards into practice in classrooms.

Among these efforts was the Kosrae, FSM, project in science. To begin, Kosrae science specialist Tulensru Waguk visited the CRDG to work with Don Young and Mary Gullickson on a science framework for Kosrae. Tulensru spent many hours researching standards and ways to bring them to life in his unique environment.

After returning to Kosrae and reflecting on the work, Waguk and Gullickson arranged an institute using activities from *FAST* to show how activities can embody standards. Twelve science teachers from all schools on the island participated. All said the institute gave them a better picture of the Pacific standards and they looked forward to implementing the sequence of activities in the upcoming school year.



I Attended a *DASH* Institute, Now What?

by Sandra Shimabukuro

Participate in one of our support seminars. In Hawai'i we offer Level 1 for *DASH* teachers who have recently completed an institute. Teachers gain support for implementing *DASH* in their classroom by sharing, problem-solving, planning, and reviewing activities with other participants.

The Level 2 seminar is for teachers who have used the program for two or more years. This year we encourage administrators to participate. We emphasize the roles of administrators, teachers, and parents in a school that uses *DASH* and the kinds of support each group needs for successful implementation.

See us on TV from your school or home! We use the Hawai'i Interactive Television System (HITS) to reach teachers statewide. You can find us on cable on Mondays starting at 3:00 p.m. Call the *DASH* office at 1.800.799.8111 or 808.956.6918 for dates and further information.

Food from ARF to the Pyramid—continued from page 5

the similarities in these two systems. On the Pyramid, color the top row (fats) and the bottom row (complex carbohydrates) *yellow*. Color the milk and meat row *red*, and color the fruit and vegetable row *blue*. The colors add a visual representation to the verbal one.

Both the ARF system and the Food Pyramid show the recommended number of servings of each kind of food by the area they occupy. In summary, the Food Pyramid shows the *quantity* and *form* or kinds of food. The ARF system shows *function* along with *quantity* and *form*, and it accounts for *simple* and *compound* foods. Students need to be familiar with the Food Pyramid because it appears on cereal boxes and other prepared foods they use at home. We encourage you to help your students to learn about and use both systems.



Nicenet and TAPPED IN Communication Systems

by John Southworth

HI-NEST has a new site on the Nicenet Internet Classroom Assistant. Below are instructions for transferring to the new site. This route takes you to a site dedicated to exchanging information—better than burying information in e-mail messages.

We are also looking at TAPPED IN, a synchronous meeting site developed by the Stanford Research Institute. Its URL is <<http://www.tappedin.org/>>. It works best with a Java interpreter.

If you go in as a guest, you can register and get an ID. You will find scheduled “chat” training sessions. You can go through the on-line tutorial yourself.

Although TAPPED IN takes a bit of getting used to, it is a powerful channel of communication. Scheduled meeting times let groups meet, discuss issues, display Web sites, and tour the virtual campus of TAPPED IN.

You can also arrange follow-up meetings with your instructor or CRDG staff. Details will appear in the next newsletter. In the meantime, you can join and get some experience with the programs already under way.

Here is the Nicenet update information for Internet Classroom Assistant Version 2.

The Internet Classroom Assistant Version 1 (ICA1) was the first Web-based site for the HI-NEST. ICA Version 2 (ICA2) began in August 1998. ICA is a free resource of the Nicenet organization, using server space donated by the Searle Center for Teaching Excellence.

You will find ICA on the World Wide Web. Use Netscape, Internet Explorer, or other browser to access the Nicenet free Web space. (You will see more information about the system once you log in.)

1. Start up Netscape or other browser.
2. Enter <URL <http://www.nicenet.net/>>.
- 3a. First-time ICA2 users continue. (Current users skip to 3b.)

- Under New ICA Users, click Join a Class (Don't press Return.)
- Enter Class Key t4407h50.
- Click the Join the Class box.
- Enter all the data requested: Create your ICA Username and Password. (You might use your e-mail user name/password if you don't want to have to learn a new one; you do not have to include your phone number if you don't want to.)
- Go to 4.

3b. Current ICA2 users (*not* those who set up only ICA1 accounts before)

- Scroll down to enter your ICA Username and Password.
- Click the Log IN to the ICA box. *Note:* If you are already a member of an ICA2 class, click Options and Tools.
- Click Join a Class.
- Enter class key t4407h50 and complete registration.
- Go to 4.

4. Once in the HI-NEST ICA class, check for Conferencing: Conferencing will report any new messages; click topic subject (e.g., HI-NEST Teacher Conference); when you enter a message (e.g., your self-introduction), go to the start of the topic and click Post Message to... Then enter the message Subject and Message Text; end and save with Post Message to add the item. You will be able to edit it after posting it. (On ICA1 you could not edit a message once it was posted.) You also can reply to a single message or send a message to the author of the message.

Other new features include

- Viewing message summaries (with various options).
- Posting a new topic.
- Link Sharing: Provides helpful links (e.g.

CRDG Web Site).

- Documents: Contains instructional reference materials (e.g., HI-NEST Sign on Information).
 - Class Schedule: Shows scheduled items and events.
 - Class Roster: Contains names, e-mail addresses, and phone numbers (if listed) of all persons registered for HI-NEST. To send someone a message, just click the underlined e-mail address after the name. In class or when you are using a school computer, you should use the Personal Messages option instead. (See below.)
 - Personal Messages (click View or Send) to communicate with others registered in ICA2.
 - Send a Personal Message: You can send a message to people in the group. Just click the box of those to whom you are writing, enter the message SUBJECT, and then the MESSAGE. When you finish, click Send Message button.
 - View Your Personal Messages: If someone has sent you a message using the ICA message system, it will appear when you check for messages. You can Reply, Archive (Save), or Delete the message after reading it.
 - Edit Your User Info: This allows you to change any of the personal information you listed when you logged in the first time.
5. Enter your personal identification as Post a New Message “HI-NEST Teacher Conference” topic. (See Schedule for details.)
 6. To end the session, click LOG OUT at the bottom of the screen.

This gives you something to work on. See you on the HI-NEST Web site.

Hawai'i Marine Science Studies (HMSS) Goes to Puerto Rico

by Mary Gullickson

The CRDG was invited to Puerto Rico this summer for the National Marine Education Association (NMEA) annual conference. Entitled "An Island Journey in Ecological Diversity," the conference drew marine educators from around the world.

Here educators and policy makers from aquariums, universities, schools, research organizations, and other related groups shared information on aquatic research, curricula, and concerns. Naomi McIntosh from the Hawaiian Humpback National Marine Sanctuary, shared the "Careers on the Water" program which gives HMSS teachers and their high school students the opportunity to learn about the multitude of marine career possibilities and the chance to whale watch when the Humpback whales visit the Hawaiian Islands each spring. HMSS trainer Ann Coopersmith from Maui Community College, gave a multimedia presentation "Hawai'i: Ecological Diversity in the Pacific Tropics." Mary Gullickson gave two presentations on "Methods of Localizing Marine Curricula" and "The Fluid Earth/The Living Ocean."

Participants challenged policy makers to expand coral reef protection as part of the Year of the Ocean Initiatives. Hawai'i participants were especially concerned that our fragile reefs might have a future similar to the reefs in the Caribbean, where vast areas of corals are dying and face serious threats from land based development and tourism such as erosion, fertilizer run-off, non-point source pollution and ground water.

CRDG is collaborating with the Department of Land and Natural Resources, the Hawaiian Humpback National Marine Sanctuary, the Department of Education and the College of Education at the University of Hawai'i to see how we can educate people and futher research our presently threatened local coral reef communities. Dave Gulko's book *Hawaiian Coral Reef Ecology* is a wonderful resource for educators around the world to learn about the environment of coral reefs and their importance to our global ecosystem. See page 15 for more information.

HMSS Swims

by Mary Gullickson

HMSS had a swimming summer, certifying two new trainers and holding institutes in Boston, Los Angeles, and Honolulu. Shirley Pauls from Mountlake Terrace, WA, and Tyra Shimabuku from Honolulu were certified in Honolulu as trainers for *The Fluid Earth*.

Shirley, winner of a presidential Excellence in Science Teaching award, holds a master's degree from Central Washington University. Her inquisitive style and positive attitude reflect her love for teaching and learning.



Tyra Shimabuku

Tyra topped off a busy summer following FAST certification by joining the HMSS institute. Her knowledge of marine science added much to the program as the instructors worked on *The Fluid Earth* training manual. Tyra, who teaches HMSS at the University Laboratory School, looks forward to doing an institute on her own.

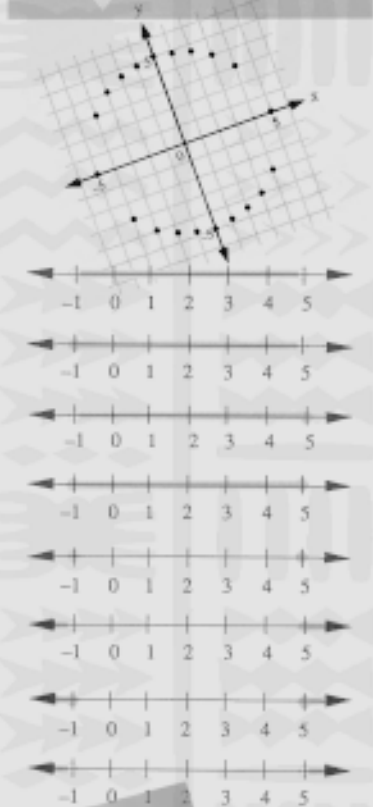
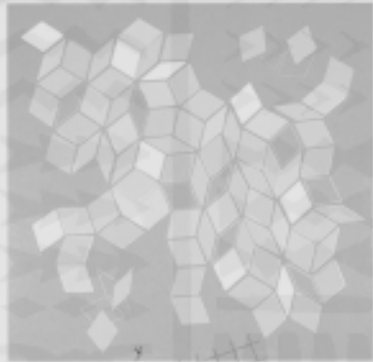


HMSS wave watching on Oahu, Hawai'i



FAST 3 Mountlake Terrace, WA, August 1998 FAST 3 Institute participants report on their analyses of weathering and erosion processes at Brackett's Landing on Puget Sound.

CRDG Mathematics Projects



CRDG Summer '98 Math Institutes

By Annette Matsumoto

Summer has come and gone, but the teachers who participated in CRDG's summer math institutes experienced middle-school mathematics, algebra, and geometry with a sense of renewal.

Friday, July 3, 1998—a state and federal holiday. At 8:00 a.m., the parking lot at the University Laboratory School should be empty. Instead, teachers carrying red algebra books and three-inch binders are getting out of their cars to attend the final day of their two-week course, “Developing Problem-Solving Processes Through the Teaching of Algebra.”

The Hawai'i course was co-sponsored by the Pacific Resources for Education and Learning (PREL), a regional educational laboratory serving educators and children in the Pacific. This year, we were fortunate to welcome three teachers from American Samoa.

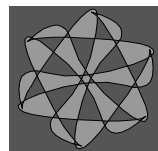
The Hawai'i Algebra Learning Project (HALP) course was offered at three other sites—Charlotte, NC; Raleigh, NC; and Agana, Guam. Special kudos to mathematics curriculum coordinators Sylvia Taitano of the Guam Department of Education, Karen Steele of the Charlotte-Mecklenburg Schools, Don McGurrin of Wake County Public Schools and Ava Thompson of Johnston County Schools, who coordinated a joint offering in Raleigh. HALP trainers Judy Ryder in Charlotte, Alicia Jones in Raleigh, and Alicia Aguon in Guam

shared their enthusiasm and expertise to make the two-week experience so worthwhile that one participant said, “I couldn't think of a better way to spend my summer vacation!”

In the course, participants took a new look at algebra through nontraditional problem-solving tasks. They learned about the problem-solving processes of reversibility, flexibility, and generalization, along with ways to develop these processes through non-routine tasks. They experienced and discussed ways to incorporate discourse, writing, collaborative group work, manipulatives, graphing calculators, and alternative assessment into their class instruction.

A Hawai'i participant reviewing the course said that the instructor “first taught us the way she would handle her class and then allowed us to give it a try the second week. In other words, she let us wear two hats, as student and teacher, and I think this is both effective and important because at times we, as teachers, sometimes forget what it was like to be students.”

Another participant attending the Raleigh course said, “The most important ideas I got from this course were how using process algebra requires students to think and solve problems on their own. I also learned how to ask good questions to encourage student discussion—which I can use in other classes as well.”



First Time for All Three Institutes

by Hannah Slovin

The Reshaping Mathematics Project (RMP) held three teacher institutes in the summer of 1998. Teachers from 14 public and private schools on O'ahu and Maui attended the institutes.

The series of institutes prepares teachers to use curriculum and practices that *mark* student-centered mathematics classes. Teachers attend one institute each summer plus

continued on page 13

follow-up meetings during the school year. The project staff formulated the institutes over the last three summers. This year our first group of teachers completed the third in the series.

The first week of Institute I gives teachers experience as learners solving problems and completing labs, using materials prepared by the RMP. They explore key ideas in the middle-school curriculum in an environment where instructors model teaching strategies that promote communication of ideas and constructivist learning principles. During the second week, teachers consider factors that affect teaching practices in math, and they create a plan for making changes in the upcoming school year.

In his course evaluation one O'ahu teacher commented, "Experiencing a constructivist approach to learning from the student's perspective and at the same time observing the teacher modeling of this process, helped me understand the difference between the 'form vs. the spirit' of change. Reading about a paradigm shift is one thing. Experiencing it internalizes it. . . . The barriers to change are no longer formidable."

Another put it simply: "Excellent. The best part is [that] the instructors truly practice what they believe in."

Institute II aims at helping teachers prepare to use units from the RMP materials in their mathematics programs. This institute takes place in two parts—Part 1 during the summer, Part 2 during the school year. Part 1 gives teachers the opportunity to learn about the RMP curriculum and to draw up plans for using it; Part 2 gives them support during the school year.

In Part 1, teachers select units they want to focus on, solve problems, make up questions, and plan to integrate the materials with other resources. They learn more about how students think, how to formulate good questions, and how to craft assessment tasks. During the sessions in Part 2, teachers can raise questions about their implementation experiences and collaborate in finding solutions to teaching issues.

Teachers found it helpful to focus on their selected units and to take time to plan. One reported, "I especially liked going through the units and understanding the 'flow' of the content and how everything tied together. The opportunity to study one unit in depth helped to clarify content issues, interaction and discourse, and the purpose of each problem, as well as to visualize how I would use it with a class."

Institute III prepares teachers to implement the RMP curriculum more fully. Like Institute II, it has two parts. Building on experience with their chosen units, participants write more teacher's notes, design assessment tasks, and draft management plans for the upcoming year. Part 2 will give teachers the opportunity to discuss experiences in implementing new curriculum, working with parents and administrators, giving feedback to students, and to visit other RMP classes.

It was a busy summer for the RMP staff and participating teachers. We look forward to the follow-up parts of all three institutes. These meetings will enable participants to explore both content and instructional issues and the staff to refine the professional development program.



Problem Set 1-6, #4 page 32, of Algebra I: A Process Approach

Suppose that you have an unlimited supply of 5-cent stamps and 11-cent stamps. You can make exact postage for 21 cents with two 5-cent stamps and one 11-cent stamp. However, you *cannot* make exact postage of 23 cents by using only 5-cent stamps and 11-cent stamps. What is the greatest amount of exact postage you *cannot* make by using these stamps?

The stamp problem is a tough one for students. Many first think the amount is infinite, perhaps because of the reference to the unlimited supply of 5- and 11-cent stamps. In an eighth-grade class, Lucas presented his solution that 39 cents was the greatest amount of postage you *could not* make using combinations of 5- and 11-cent stamps. The teacher facilitated a discussion enabling other students to understand Lucas's thinking on the problem. Then, rather than let the problem go, she assigned a writing task: Revise your problem write-up in the light of that discussion. Here is Rozelle's write-up:

My original solution to this problem was that there was no amount of exact postage you cannot make if you had an unlimited supply of 5-cent and 11-cent stamps. But during our class discussion I was proven wrong.

Lucas actually tried different combinations of 5- and 11-cent stamps and then made a table of all the exact amounts of postage that he *couldn't* make. I added my own column to the table of exact amounts of postage you *could* make.

I noticed that, at first, the amount of exact postage that you could make was less than the amount of exact postage that you couldn't make. Then, as the numbers got larger, the amount of exact postage that you could make increased and the amount of exact postage you couldn't make decreased. The amounts of exact postage you could make went from only one by itself, then increased to 2, then 3, 4, and 5. Meanwhile, the amount of exact postage that you couldn't make started from 4, then went to 3, 2, and 1. After 39, I couldn't find any more numbers you couldn't make. I assumed you could make the rest, so the largest number is 39.

<u>Can't</u>	<u>Can</u>
1	
2	
3	
<u>4</u>	5
6	
7	
8	
<u>9</u>	10, 11
12	
13	
<u>14</u>	15, 16
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18	
<u>19</u>	20, 21, 22
23	
<u>24</u>	25, 26, 27
28	
<u>29</u>	30, 31, 32, 33
<u>34</u>	35, 36, 37, 38
<u>39</u>	40
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Teachers Make Geometry a Moving Experience

By Cynthia Beppu

Each year our two-week summer math institutes offer teachers an opportunity to learn about new approaches to the teaching of secondary-school geometry developed by the Geometry Learning Project (GLP). Our course, “New Directions in Secondary–School Geometry,” helps participants to explore alternative approaches to geometric content, as learners of mathematics, in which transformations are the driving force behind the development of traditional geometry concepts.

Kicking off the summer in June was the first of our summer institutes in Raleigh, NC. The course was made possible in part by Don McGurrin and the Wake County District staff, who spearheaded and coordinated this two-week affair. Dr. W. Gary Martin, former GLP project director, and co-instructor Eleanor Pusey led the course. Several of our friends, GLP program users, from Fairfax, VA, and neighboring Johnston County also *dropped in* and drove the distance to Raleigh to attend their first ever GLP Trainers’ Training Seminar. What dedication!

Our July institute in Honolulu also brought in visitors, some from as far as the island of Kosrae in the Federated States of Micronesia. Cynthia Taomoto Beppu, GLP program coordinator, taught the O’ahu

course. One participant who attended Cynthia’s class said, “The work being done in CRDG is on the cutting edge in math education. This course presented their perception and work in a way that was highly effective.”

Maybe we’ll see you next year?

Update: *Geometry Learning Project* to be featured in the Eisenhower National Clearinghouse FOCUS Issue on Innovative Curricula. COMING OUT SOON!!

ENC FOCUS FOR MATHEMATICS AND SCIENCE EDUCATION is a bulletin published by the Eisenhower National Clearinghouse, featuring innovative programs which consist of materials that approach the teaching of math & science from a new, even radical angle.

Sharing Thoughts . . .



After taking the summer institutes of both the Reshaping Mathematics Project and the Geometry Learning Project, and now using both programs in my 6th- and 9th-grade classes for the first time this year, I am convinced that these curricula not only generate enthusiasm toward learning but also stimulate and challenge students to think at a higher mathematical level. The programs engage students’ creativity while holding them accountable for their own learning. I could never go back to a more “traditional” curriculum or style of teaching. The knowledge I gained through these two courses helped me to create standards-based classes rich in content and professionally rewarding. The students are learning more, and I am a better teacher because of these two programs.

—Elizabeth Dudley

As a relatively new teacher taking training courses of the Hawai’i Algebra Learning Project, Geometry Learning Project, and Reshaping Mathematics Project, I found them influential and supportive in molding me into the teacher I wanted to become. Although I am teaching calculus this year, the HALP, GLP, and RMP training has helped me build the techniques to create an environment and a curriculum in which all students think critically, discuss more about mathematics, and are genuinely more enthusiastic about learning.

—Linda Venenciano

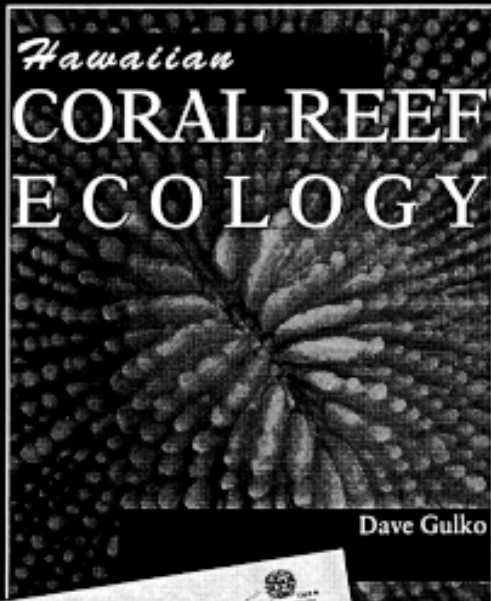
Perspectives from two course participants, one a GLP and RMP program-user, the other a non-user.

UPCOMING RELEASE!

Hawaiian Coral Reef Ecology

by Dave Gulko

A comprehensive, fun, educational book with tons of information on coral reef ecology, focusing on Hawai'i's coral reefs.



Filled with color photos, graphics, charts, graphs, diagrams and cartoons, each page will pull you into the process of discovery as you follow text and images to learn more about different types of corals; why corals are important; the vital role corals play in the ecosystem of the ocean; and how to better understand the impact local and global problems have on the world's precious coral systems.



- Perfect for classroom use!
- Reader-friendly resource!
- Filled with tidbits and trivia for the curious reader!
- Must-have for those interested in understanding and preserving our coral reefs!
- Fantastic source for aquarium hobbyists, divers, snorkelers and naturalists!
- Includes index, glossary, appendices and full bibliography!

8.5 in. x 11 in. • 256 pp • 550 full-color photos and over 150 diagrams, charts & graphs • casebound planned retail \$29.95
• softcover planned retail \$24.95

Scheduled for release February 1999

If you would like to order the book, please contact:
Research Corporation of the University of Hawaii
1776 University Ave. CMH Rm. 120, Honolulu, HI 96822
PH. 800.799.8111 • FAX 808.956.6730
email: crdg@hawaii.edu

About This Newsletter

Aloha! This newsletter is intended to keep interested people informed of new developments and happenings in the science and mathematics curriculum efforts of the Curriculum Research & Development Group.

The Curriculum Research & Development Group (CRDG) is an organized research unit of the University of Hawai'i. Established in 1966, CRDG conducts curriculum research and design, develops and evaluates educational materials, and provides professional development and support services in selected areas of the curriculum. CRDG programs serve students at preschool, elementary, middle, and high school levels. Its programs are tested and used in the University Laboratory School, in Hawai'i, the Pacific, Europe, Asia, and the Mainland United States.

CRDG is currently engaged in the development and/or dissemination of the following science and mathematics programs: *Foundational Approaches in Science Teaching (EAST)*; *Fluid Earth/Living Ocean*; *Physics, Physiology and Technology (PP&T)*; *Developmental Approaches in Science, Health and Technology (DASH)*; *Algebra: A Process Approach*; and *Geometry Learning Project*.



DASH Book List Preview Edition

Available in Macintosh and IBM versions. Schools are encouraged to make copies for all their *DASH* teachers.

To receive a disk, send check or purchase order (made out to RCUH) for \$5.00 per copy to cover shipping and handling.

Mail orders to
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Honolulu, Hawai'i 96822

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