FOSS Module Poster Packs Now Available!

FOSS Poster Packs for the Magnetism and Electricity and Earth Materials Modules are now available from Delta Education. The Poster Packs were created by FOSS developers after a survey of FOSS users put them at the top of the list of things educators would like to have to enrich students’ learning experiences. FOSS posters connect classroom learning with real-world objects, systems, and places. They provide answers to the frequently asked question “How does what we are learning in the classroom apply to the world?”

Continued on page 2
Each FOSS Poster Pack includes a set of full-color, 17 × 22-inch posters (one poster per investigation) with accompanying question strips, as well as an instruction folio that provides strategies for using the posters. The folio includes discussion questions, fun facts, research opportunities, background information, and science content and vocabulary that extend the ideas developed in the FOSS investigations and provide a focus for classroom discussions and student projects.

The posters are introduced during a class discussion period after students have completed investigations in a module. For example, the Big Room at Carlsbad Caverns National Park is included on one of the posters for the Earth Materials Module. This poster is best introduced after students have explored how acid interacts with rocks containing calcite in Investigation 3. With their knowledge of calcite, students will better understand how Carlsbad Caverns formed.

The question strips can be cut apart and a new question introduced with the poster each day. The questions can serve as a prompt for a writing exercise or for a class or small-group discussion.

Let us know how you use the posters in your classroom.

<table>
<thead>
<tr>
<th>Title</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetism and Electricity</td>
<td>162-2655</td>
<td>$39.95</td>
</tr>
<tr>
<td>Earth Materials</td>
<td>162-2666</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

For more information or to place an order, please call Delta Education at 1-800-258-1302 Monday through Friday, 8 a.m. to 6 p.m. EST or contact your FOSS Regional Manager. To find your FOSS Regional Manager, visit Delta’s website at www.deltaeducation.com/info/repsfoss.html or check page 16 of this newsletter.
O
n Fridays, the students in Mrs. Kim Cash’s first-grade class are not excited because of the approaching weekend. They are excited because it is FOSS Friday.

“What day is it today?”

“Friday!”

“And what happens on Friday?”

“Friday fun with FOSS science!”

Marie Jackson, a parent in the class, leads the class in singing “Solid as a Rock.” After a short review and an overview of stations, the children are actively exploring solids and manipulating materials at three stations. At one station is Mrs. Cash, at another is Marie, and at the third is another parent. The adults interact with the enthusiastic children and enhance their learning.

Parent involvement with FOSS investigations is not new. Teachers are advised to seek parent helpers for some activities that were designed as centers. The parental involvement in the Parents for Hands-On Science program, however, is much more substantial. Rather than involving parents just as helpers, it creates classroom leaders. Parents don’t show up and just help with an activity. Every two weeks they attend a workshop on the upcoming science lessons. They then watch the FOSS video on their own time and/or read the Teacher Guide. The parents assemble all of the materials. Then, without taking away any of the leadership or authority of the classroom teacher, the parents serve as co-teachers in the implementation of FOSS.

Rationale

Gavilan Peak Elementary School, just north of Phoenix, Arizona, swelled from less than 600 students to over 1,000 during the summer of 2003. In the rapidly growing mega-subdivision known as Anthem, the overflow was absorbed by Gavilan Peak School, which was only in its second year of operation. As a parent of a first grader in classes with 29 students, I was concerned about the overcrowding.

Rather than just complaining, I thought about how I could channel my energy into something positive. I recognized that the overcrowding in the school and in classrooms would sap the teachers’ energy and use more of their planning and preparation time. I also recognized that science, already on the backburner or in the refrigerator in elementary classrooms in Arizona because of state testing in language arts and mathematics, could be put into the freezer as teachers struggled with overcrowded classrooms. Hands-on science would be in even greater jeopardy because of the increased demands this form of instruction has for teachers’ time and the greater difficulties large classes pose for classroom management. My contribution to the problem of overcrowding was to use my knowledge of science education to start the program.

The Details

The program was started with all five first-grade classrooms, which average 29 students per class. The first module used was **Solids and Liquids**. During the semester an additional first-grade teacher was added, which reduced class sizes and added a sixth class for FOSS science. At first some teachers wanted to implement FOSS twice a week, but the majority preferred once a week. There were advantages for training and preparing materials to have all the classes on the same schedule so it was decided that all the classes would implement FOSS once per week.

An initial parent training session of 45 minutes was held. The focus was on having parents experience hands-on science, especially the idea of free exploration. I was concerned that some parents would...
not see the value in what has been respectfully termed “messing around.” Perhaps, because of this experience combined with observing the children during free explorations, parents began to recognize the open-ended inquiry phase as a valuable learning experience.

Every two weeks my wife, Kim, and I conducted training sessions where we explored and discussed a plan for the next set of activities. We also handed out an outline for the suggested activities. The outline included which pages to refer to in the Teacher Guide, whether it was whole-class instruction or stations, and the suggested amount of time. All of the training sessions were limited to 45 minutes because of the difficulty in finding meeting space in the overcrowded school. We used a first-grade classroom when the students were out for a special class. Although at times I wished we had more than 45 minutes, the limited time helped keep us focused. A few mothers brought their young children, which was not problematic; as they seemed to enjoy the environment and manipulatives in the classroom.

A sign-out sheet for the Teacher Guide and video was prepared. Parents were encouraged to use the Teacher Guide and video to become better prepared, and most did. Parents were also responsible for getting all of the materials ready for classroom use. A schedule for FOSS implementation was also established so that all classes could use the same Solids and Liquids Module kit during the same period. At a couple of the training sessions we asked for volunteers to gather or prepare certain materials.

When implementing FOSS in the classrooms, whole-class activities were generally about 45 minutes in length. When students worked at stations, the lengths of the science lessons were around an hour. In a questionnaire most parents reported spending an average of 1 hour and 45 minutes in preparation for their lesson. Each classroom had two to five parents doing FOSS. In some rooms, the same parents implemented each week; in others, parents took alternating weeks.

Reactions to the Program

When the program was still only an idea, I discussed it with the school principal, Dr. Mae Wong. She was enthusiastic from the onset. We agreed to do a pilot implementation with one grade, so I approached Mrs. Cash, the leader of the first-grade team. She was very supportive of the idea.

The parent implementers were also very positive about the program. This type of parent involvement is more intense than most. It required parents to attend the 45-minute training sessions every two weeks, spend time thinking through the details of their lessons, set up the materials, and implement the lesson. Despite these demands almost all the parents that started are still with us, and the number of parents has grown. These parents directly observe the power of the FOSS kits for helping children learn and be enthusiastic about science. One mother stated her perceived benefits of the program as follows: “It allows the kids to get a wonderful hands-on experience with science. They love it!” She added, “I have so many kids come up and tell me about how they recognized a liquid or solid at home. They just love it!” Another mother described the benefits as: “I think it is great. The kids love it, the parents are involved, and everybody is learning.”

The teachers are also enthusiastic about FOSS and the parent implementers. They see the excitement of the children and the valuable concepts they are learning. They also appreciate the quality help of the parents. The teachers want the program to continue.

As a teacher educator and former science teacher, I know and value the contributions of an educated, certified and experienced teacher. I also know how demanding it is to be a teacher and how more planning time is an important need. I also know how demanding the preparation is to teach science in a hands-on way. This planning and preparation time is greater when teachers are implementing a program such as FOSS for the first time. Having parents help in the classrooms can make implementation easier, but it does not reduce the curriculum planning time. Training parents as instructional FOSS leaders is one way to conserve teachers’ planning and preparation times.
The quality FOSS kits, the training sessions, and the average time of 1.75 hours of planning that goes into each lesson all contribute to parents helping provide tremendous learning experiences. Parents also have the time for extras. For example, one parent wrote, “a girl caught onto a concept nobody else did and I called her parents and left a message about it. I saw her father a week later and he said his wife was so thrilled about the message that she saved it.”

An important benefit of parents as partners is that they see the great value of hands-on science and the FOSS program. Many parents did not have hands-on science when they were children, so this is a wonderful way to get them to experience the value of this type of learning. It also makes them allies for this approach in the school. For example, some of our parents were on the board of the Parent Teachers Association. They helped convince the PTA to allocate money for FOSS consumables.

Sustaining and Spreading the Program

The program has been successful in bringing powerful hands-on science experiences to over 150 children in first grade. From the successes, I believe the program has enough benefits that it makes sense not only for overcrowded conditions but for regular-sized classes as well. The program makes the most sense for the early grades where teachers have a responsibility for teaching all subjects.

After we complete the first module in the first grade, I would like to move to another grade for the implementation of a FOSS module. I have already requested that the first-grade parents start thinking of who could be the first-grade FOSS leader. This person would be responsible for suggesting what the week-to-week FOSS schedule will be and for conducting the once-every-two-week training sessions. I believe that by referring to the FOSS materials and having experience teaching an entire FOSS module to first graders, a first-grade parent could do this in about two hours of planning time per two-week interval.

While I am working with another grade, I will also seek parents from other grades to attend the sessions and help implement FOSS. For example, if I am working with the second grade, we could invite parents from kindergarten and third-grade classrooms to help. After we complete one FOSS module, I will again seek a parent to step up and play the role I was playing and be the FOSS leader for that grade. I will also see if I can get parents from the other grades to go back to another grade level and implement the FOSS kits. And trained parents will be motivated to “move up” with their children.

With parents playing leadership roles in FOSS implementation, we are trying to help teachers in the early grades build a science foundation in children that is “solid as a rock.”

Peter Rillero is an associate professor of science education at Arizona State University West (www.west.asu/rillero). His scholarship interests include hands-on science and parental involvement. He can be reached at rillero@asu.edu or 602-543-6316. 

FOSS Earth History Workshop at Grand Canyon, Summer 2004

Are you interested in attending a FOSS Earth History Course workshop for middle school teachers in Flagstaff, Arizona?

We are in the early stages of planning a week-long FOSS Earth History Course workshop for 30 middle school teachers in cooperation with the National Park Service. The plans are tentative depending on interest from FOSS users.

The week’s activities could include a selection of the following: at least one full day at the South Rim of Grand Canyon including hiking down to Cedar Ridge along the South Kaibab Trail, presentations by NPS staff, an evening at the IMAX theater in Tusayan, a picnic at Shoshone Point, South Rim hikes, a Hermit Trail hike, a tour of nearby Colorado Plateau sites including a petrified forest, dinosaur tracks, and more.

We will spend 3 or 4 hours a day working with the FOSS Earth History Course materials. Each participant will receive an Earth History Teacher Guide, Earth History Resources book, Earth History Lab Notebook, and an Earth History CD-ROM.

Date: July 25–31, 2004 (Sunday–Saturday)
Workshop registration fee: $200
Housing costs: $360/person for 6 nights double occupancy (Sunday–Friday)

Additional costs include roundtrip travel to Flagstaff and meals. Flagstaff is about 1.5 hours from the South Rim of Grand Canyon. You can also fly into Phoenix (4 hours by car) or Las Vegas (5 hours by car).

If you are interested in attending this workshop, request an application form with the updated workshop logistics from Sue Jagoda (skjagoda@berkeley.edu) by April 15, 2004. Deadline for registration is April 25, including the $200 registration fee. Housing fees are due by June 1. All fees are payable to Delta Education.
As the FOSS developers suggest, elementary students learn science best by doing science. The Pittsburgh Public Schools adopted this philosophy when they began their search for a successful approach to homework, based on the idea of doing science. The Pittsburgh Elementary Science Homework Activity Calendar was the result of this search and satisfied the need for a homework tool that would support classroom instruction and continue the hands-on, minds-on inquiry that is the philosophical foundation of FOSS. This calendar also supports our efforts to fully implement a standards-based curriculum and is part of the professional development plan delivered through district workshops and site-based activities with teachers and the community at large.

A committee of teachers, parents, and administrators, along with a dedicated group of regional Carnegie librarians in Pittsburgh, joined forces to create this district-wide monthly homework calendar to explore and further develop ideas in the FOSS curriculum. As teachers became more familiar with the FOSS modules, they began to collect ideas for activities students could do on their own to extend their understanding of the concepts developed in the classroom.

The compilation of the teachers’ ideas developed into a successful homework document for students in kindergarten through fifth grade. It is published as a project of PRIME+PLUS (Pittsburgh Reform in Mathematics Education and in Programs for Learning and Understanding Science), a part of the Division of Instructional Support representing the combined departments of mathematics and science in the Pittsburgh Public Schools.
PRIME+PLUS is a systemic plan to implement standards-based, inquiry-centered science and mathematics education to all students in kindergarten through grade twelve. The Pittsburgh School District is in the fourth year of a five-year National Science Foundation Urban Systemic Program (USP) to implement this plan and raise student achievement levels.

Web and Print Formats

The introduction page to the homework calendar on the web includes a chart as seen above with a column for each grade level and a link to each month's calendar. The homework calendar is a chart with an array of activities entered in boxes. The activities are grouped loosely by categories in each column. We try to include a range of homework activities that relate to these five areas of the curriculum:

- Specific science activities related to the FOSS module.
- Environment and ecology standards-based activities highlighted in the FOSS module.
- Investigations that relate FOSS module activities with the district’s mathematics program, Everyday Mathematics.
- Career awareness and social studies/geography connections with ideas from FOSS extensions and our Career Development division.
- Science connections to language arts and other related arts as explored in the suggested readings from the FOSS Teacher Guide Resources section and FOSS Science Stories and in alignment with our literacy program.

These calendars are published using a color-coded system to designate grade levels. Teachers and/or students determine the number of assignments to be completed each month. The calendar is intended for all students and encourages family participation. It provides opportunities for students to choose hands-on activities rather than fill-in-the-blank or rote assignments.

The Home/School Connections and Interdisciplinary Extensions described in the FOSS science curriculum provide a basis for a number of the suggested homework activities. The homework activities enable the classroom teachers and their students to address other standards (e.g., mathematics, language arts) while engaging in a variety of interesting investigations. Selected activities throughout the calendar encourage students to seek community resources, such as local businesses, museums, nature centers, and the regional branches of the Carnegie Library of Pittsburgh.

Continued on page 8
Pittsburgh continued

Context
One of the most successful aspects of this calendar has been its use in integrating the FOSS curriculum with other content disciplines and in meeting district standards in other content areas. Math, reading, and science teachers worked collaboratively to identify common strategies and skill criteria in each curriculum area. This provided a consistent “language” that is used by all teachers in all content instruction.

For example, our *Everyday Mathematics* curriculum teaches computation skills. These skills are exercised in FOSS investigations where students record and average numerical data. Problem-solving opportunities in FOSS investigations reinforce students’ skills in reading, interpreting results from acquired data, and using new information to stimulate further investigation. Activities from the FOSS modules align with many of the routines developed in the *Everyday Mathematics* lessons. Data organization using graphs, charts, and tables prepares students for standardized assessments.

One of the most obvious math connections has been with the FOSS *Measurement Module* and its use of basic metric tools and standard metric units of measure. Students receive focused, comprehensive instruction in the classroom in the appropriate use of these measurement tools. Activities on the homework calendar reinforce both the science module objectives and the mathematics objectives.

A collateral benefit that has surfaced as a result of this homework venture is the collaboration with the librarians at the regional branches of the Carnegie Libraries of Pittsburgh. Through the initiative of the librarians, our homework calendar has been incorporated into their website as a resource for both our students and their families. This collaboration has led to increased use of the library facilities.

Various activities on each calendar are highlighted and have hyperlinks to further information and resources related to the activities (see examples below). There are additional links to module-specific book lists (both fiction and non-fiction) that support the science concepts being developed. Teachers and parents are able to encourage their children to utilize this resource, increasing student involvement with technology at home, in school, and at the public libraries.

Science and Literacy
Current federal legislation has demanded an emphasis on the instruction of math and language skills for our students. Providing opportunities for students to practice their skills through calendar activities was not difficult because the FOSS curriculum design and philosophy of learning lend themselves to the development of basic skills.

- Content/inquiry charts include questions that can be explored effectively by students and lead to new questions.
- Hands-on investigations enhance students’ reasoning abilities; students incorporate their observations and ideas into group discussions.
- Investigations and firsthand experiences help students develop more abstract ideas.
- Introduction of new vocabulary in the context of the lesson encourages students to use appropriate, module-specific language.
- FOSS response sheets support task-related reading and writing.
- Students’ oral and written presentations of homework investigations enhance their communication and leadership skills. These presentations are also applicable to portfolio and standards requirements.
- FOSS *Science Stories* can be used as supplemental texts to extend students’ experiences beyond the classroom and enhance their understanding of the big ideas of science.
The homework calendars also stimulate interest and attendance at various community resources and have resulted in a more school-friendly relationship with agencies that include the National Aviary, Pittsburgh Zoo and PPG Aquarium, and the Carnegie Science Center. Collaborations have also involved our nature centers, the Carnegie Museum of Natural History, Phipps Conservatory, and our city parks.

**Evaluation**

With 58 elementary schools and over 15,000 elementary students in the district, consistency in implementing and monitoring of the homework system becomes crucial to its success. A standardized homework rubric was created. The evidence supplied by the rubric can be reviewed and summarized for reporting student achievement and accomplishments and can also provide information to maintain and improve the homework system.

The rubric was developed by our teachers and is published in print and online with the calendar. The students can evaluate their own success with assignments and participate in peer review and group discourse in the classroom. This rubric, along with a letter of explanation and the calendar, is sent to all students’ homes at the beginning of each academic school year. In this way, parents can take an active role in the evaluation of their child’s homework presentations because the performance expectations are clear to all stakeholders.

The homework produced by students is displayed in classrooms throughout our district. The work shows real-life application of science and technology and serves as evidence of students meeting standards.

**Parental Involvement**

This homework initiative would not be successful without the support of our parents. Feedback from parents has been extremely positive. They appreciate the organized approach, the clear expectations, and the fact that these activities are not the typical rote assignments. Parents have also indicated that since the introduction of the calendars their children have been more enthusiastic about completing and turning in science homework.

Parents have been invited to become active participants in generating homework ideas. The collaborative family science homework assignment is one example of how creative thinking on the part of parents can solve a logistics issue for families with children at two or more grade levels. The collaborative family assignment allows the whole family to choose a theme for a homework activity. Each child contributes a portion of effort to the assignment. Each child highlights his or her personal contribution and then submits the completed assignment to his or her respective teachers.

**Student Involvement**

The most crucial stakeholders in this homework initiative are, of course, the students. Teachers can initiate the procedure and parents can express their approval and support, but if the students

*Continued on page 10*
Pittsburgh continued

do not complete the assignments, all
efforts are in vain.

Having a choice in assignments is
a compelling feature of this initiative.
Science is fun, not threatening. It is part of
our everyday life. It explains how things
work and why. This appeals to the natural
curiosity of children, and we are tapping
into this trait to everyone’s benefit.

Our homework calendar is a work-
in-progress. We encourage all of the
stakeholders involved to submit suggestions
for additional activities at any time. These
suggestions become part of a bank of
information that enables us to keep the
calendar fresh and accurate.

At the conclusion of each school year
a core group of elementary teachers
reviews and refines the entries, updating
technological information and utilizing
new activities that have been submitted
to keep the homework assignments
contemporary and interesting.

The ongoing success of this endeavor
reinforces our initial purpose of creating
a vehicle to further science awareness
outside of the classroom. It has corrected
many of the misconceptions about science
education held by teachers and parents
and has become one of the most positive
advertisements for maintaining hands-on
science instruction in our elementary schools.

For more information about the Pittsburgh
Homework Calendar project, you can visit
the website at: http://cms.pps.k12.pa.us/
Academicoffice/science/homework.asp or contact
James Simeone at jsimeone1@phgboe.net

Student Comments about Homework
Activities

“You get to experience more things in science.
You have the opportunity to learn more things. I
enjoy making the science projects.”

“When we look up inventors, we look up what
they invented, how much their invention weighed,
how long did it take them to build it, and learn
about how they thought about the invention. That’s
interesting.”

“I like some of the projects…like what they
have on electricity. I would like the science
calendar to have projects that we are not doing in
school. It’s interesting to pick other projects.”

Submit a Project Poster to www.FOSSweb.com

Has your class completed projects as
part of a FOSS module? Consider
submitting one or more projects for
inclusion on FOSSweb. Here’s the
information a student needs to submit a
project poster to foss@berkeley.edu.

1. Name (first name and last initial)
   School
   City, State
   Grade
   FOSS Module

2. A short project description (one
   sentence to describe what you did for
   your project; 50 words or less)

3. A long project description in which
   you answer all of these questions:
   1. What was the question you
      investigated?
   2. What materials did you use to
      complete the investigation?
   3. What references did you use for
      your project (e.g., books, websites)?
   4. What steps did you follow to
      complete the project?
   5. What were the results of your project?
   6. What conclusions did you come to
      from your project results?
   7. What did you learn from doing your
      project?
   8. What new questions about this topic
      do you have after investigating your
      question?

Image of Poster

Please submit one or two digital
images of your poster or project. The
resolution should be as high as you can
get with your camera. We suggest at least
800 X 600 (high resolution on your
camera). If there is text on your poster
that you want people to read, make sure
you can view it on a monitor before
submission.

If you have any questions about
submitting a poster, please contact the
FOSS staff at foss@berkeley.edu.
Flexibility Web: An Activator/Assessment Tool
By Judith Aguiar, Science Resource Teacher, Fall River, Massachusetts

In Fall River we know that students learn best when they are involved in real investigations and have a kit-based program. We recently got our state test results for science, and our students did well compared to other districts in the state that have similar demographics. We know what we’re doing is good, but teachers are not always sure what their students are learning. So we are trying to help teachers with the assessment piece. The assessment tool we are using is called a flexibility web.

A flexibility web (also known as a concept web or concept map) is a visual representation of what a student knows about a concept or topic (graphic organizer). Flexibility webs can be used in several ways as a tool to help both students and teachers. Used at the beginning of a study, it helps students to focus in on the topic being presented. Teachers gain information about what the students already know about a topic and if they have misconceptions that need to be addressed. This information can help teachers when planning future lessons. At the end of a lesson or study, the web is returned to the students and they add new information about the topic. Teachers can see if misconceptions have been rectified. When students correctly use lines and or words to connect ideas and concepts on their web, they are using a higher level of thinking and demonstrating a clear understanding of the topic. The ability to use a graphic organizer like the flexibility web is another goal we have for our students.

The following example describes how I used a flexibility web with a group of second graders as they began the FOSS Pebbles, Sand, and Silt Module.

The first investigation, First Rocks, asks students to observe, compare, and sort rocks. Before we began the study I was interested in knowing what the students already knew about rocks. I used a flexibility web because I could gather information about each student’s prior knowledge and use this same tool to assess their mastery of the standards at the end of our study. (Please note that I engaged in other formative assessments as we went along.)

In the center of a piece of paper, I wrote the word Rocks. I drew several lines out from this central word. I made a copy of this master for each student. Students wrote their ideas on these lines. They worked alone and wrote at least five words or short phrases that demonstrated what they already knew about rocks. (I was surprised to learn that several students were not able to write five ideas about rocks.) When this was completed, I asked students to share their ideas and we developed a class chart titled “What We Know about Rocks.” The chart remained up for viewing during the study. We added new information that students felt was important as we continued with the investigations. The students dated their papers, and I collected them.

At the end of the study I returned the students’ webs to them, and they added all of the new ideas and concepts they had learned. Students used a colored pencil to indicate their changes and their growth in understanding. Because we have specific state standards that students are expected to understand, we periodically checked in with students and had them demonstrate their understanding in a variety of ways (e.g., drawings, notebook entries, performance tasks, discussions). FOSS includes specific support for formative and summative assessment in each Teacher Guide.

The flexibility web worked really well for the two classes in which I used it. Teachers could see what the students had learned. Students were quite proud to see how much more they were able to add to their webs the second time around. I have found that a flexibility web works well with a variety of learners as well as with special-needs students.

Judy Aguiar
104 Circle Drive
Somerset, MA 02726
A FOSS Success Story in Texas

This article was developed through an e-mail sent to Verne Isbell, FOSS Sales Manager in Texas. The article highlights the important impact of well-planned and thoughtful professional development in the implementation of the FOSS curriculum.

Dear Verne,

TRSI (Texas Rural Systemic Initiative) is all about documentation so I thought you might like another success story for your records.

I became aware of FOSS three years ago when I was still a teacher partner with TRSI and I taught K–1. TRSI loaned me the FOSS Balance and Motion Module (which is an awesome module!) and I was “hooked!” I persuaded my principal to order four modules for our campus. The other teachers on my campus slowly began to try them, and the excitement spread.

When I became a specialist for TRSI last year, FOSS was the first thing I looked for when I went into each district. Vickie Gearheart at Trinity Elementary had ordered almost ALL of the kits for her K–5 teachers! The modules were just sitting in the library. None of the teachers were even attempting to open them. Ms. Gearheart and I decided it would benefit their campus if I would come in and demonstrate one module per grade level.

Trinity is part of a STRANDS project which is very focused on environmental education, so we chose Insects, Structures of Life, and Environments. The first day I worked with first and second grade, the next day with third- through fifth-grade teachers. The teachers were very reluctant at first, but by the end of the day they were excited! I think the snail races were the clincher for them. We had so much fun! (I had to sneak in some activities from Balance and Motion and Levers and Pulleys just because they are my favorites.)

On August 13 Vickie scheduled me to work with the kindergarten and first-grade teachers again. They were thrilled to gain more experience with FOSS. We worked with Animals Two by Two and Solids and Liquids. They then prepared the Solids and Liquids kit for their use throughout the year. They also discussed how best to divide up the modules so grade one would experience three modules and grade two would experience the other three.

The teachers are so into science now because of FOSS and an administrator who was willing to support FOSS implementation. The teachers were asking when I would be back to work with them. Two of them even hugged me saying this was the best workshop they had been to in a long time. FOSS makes it easy to keep teachers interested. And if they are excited, their students will have better opportunities to learn.

Thanks for putting together excellent science modules for teachers and for allowing me to borrow the Measurement Module to share with other educators.

~Dee

Dee Mock
Regional Specialist
Elementary Math and Science
Texas Rural Systemic Initiative
http://www.texasrsi.org
e-mail: dmock@mail.wtamu.edu
Are you searching for literature books to accompany your FOSS modules from the Scientific Reasoning Strand for Grades 5–6 (Variables and Models and Designs Modules)? Check out these recommendations from experienced teachers around the country, shared by FOSS consultant Lynne Bleeker. For her complete book list, feel free to email her at lynnebleeker@mchsi.com.

**THE BOY TRAP**  

My all-time favorite science book! This fun fictional story has many of the themes we want to stress in science: setting up a fair test, intellectual honesty, cooperation, and role models in science. All of this comes out as a student sets out to prove for her fifth-grade science fair project that girls are smarter and more polite than boys. The boys find out about it, outdo themselves to be polite, and prove her wrong—and the whole school gets involved! I especially like her correspondence with her aunt, who is a research scientist. A great story—well worth investing in a whole class set.

**SPIDER BOY**  

This is another great story for upper elementary students. In this one, a student moves to a new state and endures teasing for his love of spiders. This “new kid” is passionate about all arachnids (which is great for teaching appreciation of all life, not just the fuzzy mammals)! What is especially neat about this book is the boy’s interest and talent for writing in his journal. This is another great book to have the whole class read.

*Continued on page 14*
Wordsmiths continued

**Motel of the Mysteries**

This has to be one of the weirdest books in my collection! Although it might seem to fit best in an archaeology unit, it’s also great for the Models and Designs Module. In this illustrated story, archaeologists from the future make discoveries and inferences about people and artifacts in a motel room from the present. Their wrong inferences about the uses of various everyday items are hilarious! For example: a toilet seat is illustrated and labeled as a “ceremonial head-dress.” In addition to amusing the reader, these crazy inferences show how scientific models must be constantly open to questions and revision.

**George’s Marvelous Medicine**

You don’t even have to be a Roald Dahl fan to appreciate this book. I like to use it to illustrate the need for writing down a scientific procedure exactly the way it was done so that it can be replicated by oneself or others. It’s also great for lab safety: the dangers of mixing substances “just to see what will happen.” (George finds every nasty chemical he can think of and mixes them all together with disastrous results for the relative who consumes the mixture.)

**Marvels of Science**
(50 Fascinating 5-Minute Reads)

I wish I had known about this book when I first started collecting books to incorporate more history of science into my teaching. It could have saved me a lot of money! This book includes short stories about famous scientists through time (such as Fleming) told as a story with characters and dialogue. It is well-written and interesting. Each selection includes some guiding questions at the beginning and at the end it suggests places to go for more information.

---

**Check out the resource database on FOSSWEB!**
All of the books described in this issue of the FOSS Newsletter can be found in the Resource Database on FOSSweb. The Resource Database [http://lhsfoss.org/fossweb/teachers/resources/index.html] allows you access to all of the recommended resources for the FOSS modules and courses (grades K–8), including books, videos, software, and websites. You can download a “canned search,” do your own personalized search and submit resources you find useful that are not yet included in the database. You can also find information on this page that allows you to sign up to connect to downloadable pdfs of FOSS duplication and assessment masters.

---

**Resources**

Each FOSS module includes a teacher guide containing a Resources folio of annotated listings for nonfiction and fiction books for students, resource books for teachers, software, multimedia, videos, and web sites that extend the hands-on science activities in each module.

FOSS has developed a searchable database to provide additional access to teacher resources on the web. You can perform two types of searches, module resources or open-ended. You can also submit a resource of your own. Click the headers below.

- Module Resources
  This canned search lists all teacher resources for a module or set of modules. Click the header to access the database.
- Open-ended Search
  Search the resources database by title, Spanish title, resource type, or module. Click the header to access the database.
- Submit a Resource
  If you are using resources with your students to enhance the FOSS modules and they are not in our database, please submit them. FOSS staff will review all submissions and post them as appropriate. Click the header to access the database.

Replacement Duplication Masters
Each FOSS teacher guide includes Investigation Duplication Masters (student sheets) and Assessment Duplication Masters. If you are a teacher and your FOSS teacher guide is missing an investigation or assessment master, replacement sheets are available. Click the header to access the files.
Delta Education will host one-day FOSS Institutes on March 31, 2004, in conjunction with the NSTA National Convention in Atlanta, Georgia. There will be a K–6 User Institute and a Middle School Informational Institute. These institutes are designed for all educators—lead teachers, administrators, curriculum coordinators, professional developers, and university methods instructors.

The K–6 FOSS User Institute will bring together FOSS educators to share their implementation experiences involving science and literacy with a focus on science notebooks. The FOSS developers will be there to facilitate the discussion and provide program updates and introduce new program components.

The Middle School Institute will provide an introduction to the program by focusing on a few of the seven courses currently available. Other Middle School courses will be featured in the FOSS commercial workshops during NSTA (see schedule to the right).

The Institutes are led by FOSS development staff. There is no charge, but participants must register in advance to attend. Times and locations are listed in the calendar. To secure your spot at the Institute of your choice, call, write, fax, or e-mail:

Pam Frisoni
Delta Education
80 Northwest Boulevard
Nashua, NH 03063
pfrisoni@delta-edu.com
Phone: 1.800.258.1302 ext. 503
Fax: 603.579.3504

If you would like to be added to the mailing list to receive this newsletter, send your name and address to:

Kristi Guillemette
Delta Education
80 Northwest Boulevard
Nashua, NH 03063
kguillemette@delta-edu.com
Phone: 800.338.5270

For more calendar events, visit FOSSweb at http://www.fossweb.com/news/calendar.php

---

**FOSS Institutes**

**FOSS Professional Development Calendar**

**NSTA National Convention**
Atlanta, Georgia
April 1–April 4, 2004

**FOSS Middle School: Weather and Water Course Overview**
Thursday, 8:00–11:15 Room B201, Convention Center
Presenters: Linda De Lucchi, Sue Jagoda, and Larry Malone, Lawrence Hall of Science, UC Berkeley

**Approaches to Inquiry: Successes and Challenges**
Thursday, 3:30–4:30 Omni Hotel, Pine Room
Presenters: Manisha Hariani, Sue Jagoda, Carolyn Willard, Lawrence Hall of Science, UC Berkeley

**FOSS Assessment for Grades 3–8**
Friday, 8:00–10:15 Room B201, Convention Center
Presenters: Kathy Long and Terry Shaw, Lawrence Hall of Science, UC Berkeley

**Overview of FOSS for Elementary School Grades K–6**
Friday, 11:00–12:15 Room B201, Convention Center
Presenters: Linda De Lucchi and Larry Malone, Lawrence Hall of Science, UC Berkeley

**Integrating Mathematics and Science Using the FOSS Middle School Electronics Course**
Friday, 1:00–2:15 Room B201, Convention Center
Presenter: Larry Malone, Lawrence Hall of Science, UC Berkeley

**Science Notebooks: Writing about Science Inquiry**
Friday, 2:00–3:00 Hilton Atlanta, Walton Room
Presenters: Lori Fulton and Brian Campbell, Clark County School District, Las Vegas, Nevada

**FOSS Middle School: Planetary Science Course Introduction**
Friday, 3:00–4:15 Room B201, Convention Center
Presenters: Larry Malone and Linda De Lucchi, Lawrence Hall of Science, UC Berkeley

**Using Science Notebooks Featuring FOSS**
Saturday, 8:00–11:30 Room B201, Convention Center
Presenters: Jeri Calhoun and Ellen Mintz, Science Associates, Charleston County School District, South Carolina

**Pushing the Envelope: Inferential Thinking for Middle School**
Saturday, 9:30–10:30 Hilton Atlanta, Henry Room
Presenter: Sue Jagoda, Lawrence Hall of Science, UC Berkeley

**FOSS Middle School: Populations and Ecosystems Course Introduction**
Saturday, 1:00–4:15 Room B201, Convention Center
Presenters: Terry Shaw and Larry Malone, Lawrence Hall of Science, UC Berkeley

Visit the Delta/FOSS booth (#2233) in Atlanta

For more calendar events, visit FOSSweb at http://www.fossweb.com/news/calendar.php
About This Newsletter...
The intent of the FOSS Newsletter is to help FOSS users develop a network of support across the country. Delta Education and LHS will work together to bring you news two times per year, including articles regarding the latest development of modules, tips about management from teachers and administrators, ways to make connections with other teachers and districts, extensions and reading materials to add to modules you are already using, and informative articles about good educational practices.

So, we need your help. If you have a tip that enhances the teaching of FOSS or would like to submit an article (with photos) about exciting activities or school programs, management, implementation projects, etc., please send them in. We would also like to hear from your students, whether they have questions about the content, projects they have done, photos or other images they have created, or insights into how they use the World Wide Web with FOSS. Send your contributions to:

Sue Jagoda, Editor
foss@uclink4.berkeley.edu
FOSS Newsletter
Lawrence Hall of Science
University of California
Berkeley, CA 94720-5200

The deadline for submissions to the next issue is June 14, 2004. We’re waiting to hear from you.

Delta FOSS Sales and Marketing Division
800.258.1302
603.957.8899
fax 603.579.3504

Tom Guetling
Vice President Sales & Marketing
tguetling@delta-edu.com

Pam Frisoni
Institute Coordinator
pfrisoni@delta-edu.com

Kristi Guillemette
FOSS Product Manager
kguillemette@delta-edu.com

Harold Edwards
Director of Sales
609.646.0478
bedwards@delta-edu.com

FOSS Regional Sales Managers
All Regional Managers have toll-free voice mail at 800.338.5270

Rick Brost
IA, No. IL, MN, WI
847.838.9689
r_brost@yahoo.com

Bill Corbett
ID, KS, MT, ND, NE, SD, UT, WY
603.579.3541
bcorbett@delta-edu.com

Jane Degory
West NY, East OH, PA, VA, WV
412.257.1903
jdegory@delta-edu.com

Knansie Beth Griffing
CT, MA, ME, NH, East NY, RI, VT
603.315.1220
kgriffing@delta-edu.com

Verne Isbell
AR, LA, OK, TX
817.379.2013
visbell@delta-edu.com

Comer Johnson
AK, CA, HI, OR, WA
530.672.1233
cjjohnson@delta-edu.com

Steve Jones
AL, FL, GA, MS, NC, SC
904.810.4132
sjones@delta-edu.com

Adrienne Maughan
KY, MI, West OH, TN
513.936.8074
amaughan@delta-edu.com

Chika Onyeani
DC, DE, MD, NJ, NY City
908.851.2551
conyeani@delta-edu.com

Tom Pence
IL, IN, MO
630.215.3017
tpence@delta-edu.com

Dean Taylor
AZ, So. CA, CO, NM, NV
928.527.8717
dtaylor@delta-edu.com

Delta Education...because children learn by doing*
80 Northwest Boulevard
Nashua, NH 03063

Knansie Beth Griffing
CT, MA, ME, NH, East NY, RI, VT
603.315.1220
kgriffing@delta-edu.com

Verne Isbell
AR, LA, OK, TX
817.379.2013
visbell@delta-edu.com

Comer Johnson
AK, CA, HI, OR, WA
530.672.1233
cjjohnson@delta-edu.com

Steve Jones
AL, FL, GA, MS, NC, SC
904.810.4132
sjones@delta-edu.com

Adrienne Maughan
KY, MI, West OH, TN
513.936.8074
amaughan@delta-edu.com

Chika Onyeani
DC, DE, MD, NJ, NY City
908.851.2551
conyeani@delta-edu.com

Tom Pence
IL, IN, MO
630.215.3017
tpence@delta-edu.com

Dean Taylor
AZ, So. CA, CO, NM, NV
928.527.8717
dtaylor@delta-edu.com

FOSS Newsletter Online
Would you like to receive the FOSS Newsletter electronically? Please send an e-mail to kguillemette@delta-edu.com to start receiving this newsletter via e-mail. Include your name, title, school, and e-mail address. You can also view both the recent and previous FOSS Newsletter, as well as archived articles, at lhsfoss.org/newsletters.

For More Information
For information about purchasing FOSS or for the phone number of your regional representative, call Delta Education, toll free at 800.258.1302 or log on to www.deltaeducation.com

For information about the development of the FOSS program, contact:
Larry Malone or
Linda De Lucchi
FOSS Program
Lawrence Hall of Science
University of California
Berkeley, CA 94720
voice: 510.642.8941
FAX: 510.642.7387
e-mail: foss@berkeley.edu
Internet: www.fossweb.com

lhsfoss.org

See you at the NSTA National Convention in Atlanta this Spring!

Poster Packs Now Available! To order call Delta Education at 800.258.1302.