Surfing for FOSS Information: A New Look for LHS/FOSS and FOSSweb
By Susan Jagoda, FOSS Developer, Lawrence Hall of Science

If you have looked for information about FOSS on the familiar websites during the past few months, you probably noticed some big changes. Or, at least they were big to the FOSS staff renovating the old FOSS sites at the Lawrence Hall of Science and on www.FOSSweb.com. FOSS has had a "web presence" for over a decade, and it was time to refashion the web-based information to reflect the updates and additions to the FOSS program that have occurred over that time.

There are two websites that provide FOSS program information.

lhsfoss.org. This is the FOSS project site and provides information about the project based at the Lawrence Hall of Science, University of California at Berkeley. FOSS is a research-based science program for grades K–8 developed at LHS with support from the National Science Foundation and published by Delta Education. Educators seeking information about the FOSS program goals, features of the program, standards correlations, or effectiveness data will find the lhsfoss.org website useful. Specific information found only on this site includes strategies and materials for full engagement of students with disabilities, research projects related to FOSS in classrooms, and information about science and literacy.

FOSSweb.com. This is the FOSS users’ website. The research, development information, and issues found on lhsfoss.org are closely linked to FOSSweb.com. FOSSweb is designed to provide enrichment for Continues on page 2
students and support for teachers, administrators, and families who are actively implementing and enjoying FOSS program materials. Teachers will find tips for enhancing specific modules or courses; FOSS-approved print, video, and web-based resources; classroom management ideas; and plant and animal care. FOSSweb will also be of interest to administrators and curriculum specialists in search of a calendar of professional development opportunities, implementation strategies, and materials management tools. Parents and families of students using FOSS will enjoy the module-specific student activities for grades K–2 and 3–6 now on FOSSweb.

In many ways the two websites—lhsfoss.org and FOSSweb.com—function as one. You will also find links to a third FOSS-related website at Delta Education. At the Delta site (www.deltaeducation.com/foss/index.html), you will find information about purchasing FOSS materials and replacement items and the name and contact information for your regional FOSS representative.

Access to all of the FOSS website resources is instantly available by extensive cross-linking. In no time at all, you will learn how to use the links in the headers and footers as well as the sidebar menus to move seamlessly through the information stored in the websites.

So, what’s new? If you have a web connection, you might want to bring this article with you to your computer and follow along.

**WWW.FOSSWEB.COM**

FOSSweb has a new look, especially with the addition of the grades K–2 interactive activities and resources. When you open the FOSSweb link, you will see some of the same organization as the old site with some new links and information. FOSSweb is described as “The official site for the inquiry-based FOSS science curriculum.” In other words, it is the FOSS users’ site.

The FOSSweb introduction page includes links to:

- FOSS News
- Grades K–2 Module Activities for Students and Information for Teachers
- Grades 3–6 Module Activities for Students and Information for Teachers
- Middle school resources, activities, and other information (coming soon)
- Information for Schools and Districts
- Information for Teachers and Parents

You will also find links from this home page to information about setting up your browser, minimum requirements for your computer in order to use FOSSweb effectively, and terms of use information.

**FOSS News**

Click on the word “News” in the green bar and travel to a page that includes the latest news and project updates. Check this link often to catch up on the latest news about the FOSS project such as updates to modules and courses. You can also find information about FOSS professional development workshops ([Professional Development Calendar](http://www.fossweb.com/lddevelop.html)) or access the FOSS newsletter link.

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**Navigating www.FOSSweb.com**

Check out the sidebars, banners, and footers on each page found under www.FOSSweb.com. The banner allows you to quickly link to information for schools and districts and for parents and teachers. The footer includes links to FAQs (frequently asked questions) concerning the technical issues of using FOSSweb, a site map, a search function, contact FOSS e-mail, lhsfoss.org, privacy policy information, K–2 module pages, and 3–6 module pages. Scroll down a bit more and you’ll find links to the Lawrence Hall of Science and University of California home pages. These navigation tools are found on most www.FOSSweb.com pages, except the K–2 and 3–6 activity pages. The banner on the activity pages includes a calculator, a search function, a link back to the FOSSweb welcome page, and a link back to the index (“choose a module”) page for the particular grade levels.
Grades K–2 Modules

Information and activities for grades K–2 have been added to FOSSweb. Clicking on the word “Preview” under the grades K–2 flag takes you to a brief overview of what you’ll find on the K–2 site. Clicking on the Grades K–2 icon (a kite) will take you to a menu screen (see above) with links to each of the K–2 modules. From here you can choose a module and travel to a wealth of information and activities specific to that module for students, parents, and teachers. Each module page includes a section for students with an interactive activity, a photo gallery, an Ask a Scientist section, websites, and movies. For parents and teachers there is a module summary, a vocabulary list, information about plant and animal care, a link to home/school connections, resources, and tips and tricks for using FOSS in the classroom.

For example, if you click on Air and Weather, you’ll find an activity in which students need to decide what the cartoon bear needs to wear to face the weather that day. The Photo Gallery includes images of various objects and organisms that use air. In the Ask a Scientist section, a question is answered about the direction from which wind blows. As the site develops, students—with help from parents and teachers—will be able to submit questions that may be included on the site. The Movies section includes a movie showing how the weather changed over a day as viewed from the Lawrence Hall of Science.

Grades 3–6 Modules

The grades 3–6 section of FOSSweb for students will appear almost unchanged to those folks who have already become familiar with it. Clicking on the Grades 3–6 icon (the crayfish) takes you to a menu page with links to each of the grades 3–6 modules. From here you can choose a module and browse the activities and information for students, teachers, and parents. For students, each page includes one or two interactive activities, student-created posters, pictures, movies, websites, books/software, and an Ask a Scientist section. For parents and teachers, there is a module summary, information about plant and animal care, a link to home/school connections, resources, and tips and tricks for using FOSS in the classroom.

For example, when you open the Variables page, you can play Blasto! the Subhuman Cannonball Game, view pictures of an ancient catapult, play movies showing sound experiments by NASA scientists, and find out how Robbie Knievel managed to jump the Grand Canyon on a motorcycle in the Ask a Scientist section. The Posters section is in progress. In this section for each module there will be student-generated posters created as part of students’ end-of-module projects. (If you are interested in submitting a poster, please contact foss@uclink4.berkeley.edu for more information.)

Middle School resources, activities, and other information (coming soon)

The FOSS Middle School section is still under development. For now, limited information about resources related to the FOSS Middle School courses, such as books, videos, software, and websites, is included in the searchable resource database, located at http://lhsfoss.org/fossweb/teachers/resources/index.html.

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Connecting FOSS and Science Notebooks: A South Carolina Experience

By Jeri Calhoun and Ellen Mintz, Science Resource Teachers Charleston, South Carolina

When effective professional development is in place and teachers are properly prepared to implement the use of FOSS modules in their classrooms, teachers are ready to move beyond the instructional guide and connect the curriculum in ways that meet the needs of their own classroom and school communities. As a teacher’s level of expertise increases, the use of science notebooks becomes more prevalent. Teachers are finding that using science notebooks in conjunction with FOSS science modules is a logical next step to ensure that student achievement is affected in an even more powerful way than the use of kits alone.

Beginning teachers and teachers who are using FOSS modules for the first time should be encouraged to teach the module in its entirety before beginning to personalize or extend it. They should be discouraged from straying from the content and concepts presented and reminded that the kits are not “activities in a box,” rather they are part of a curriculum.
that was chosen because it meets the National Science Education Standards as well as the specific state science standards.

There is a tremendous movement toward connecting curriculum areas in order to maximize teaching time and to provide real opportunities for application of science content and skills. Science notebooks and the FOSS curriculum serve as a perfect vehicle to make connections. The modules provide an unlimited supply of writing prompts for the teacher to use. New science notebook users will often frame their notebook prompts directly from the investigation duplication masters provided in the teacher guide because they want to make sure they are using the research-based materials that help students develop conceptual understanding. Other times key parts of the masters are reduced, cut, and pasted directly into student notebooks.

As they become more comfortable with the process, teachers move away from the masters and extend the lesson to meet other content area standards or objectives. It is not unusual for a teacher to turn a FOSS lesson designed to take one day of science instruction into one that takes two to three days to complete. An extended FOSS investigation may also address math, language arts, or social studies standards. The use of science notebooks with the FOSS investigations has proven to be both a timesaver and method of making the curriculum more meaningful.

Often we are concerned that students don’t come to us with the background knowledge needed to successfully complete classroom assignments. The FOSS modules provide the experiences needed to level the playing field so as to ensure that all students are able to actively engage in classroom activities with the same level of writing produced after students have completed an investigation is richer in content than writing produced when teachers merely develop writing prompts for the purpose of acquiring evidence of student growth. Science notebooks used in conjunction with FOSS materials allow students even more opportunities to write and reflect on what they are learning.

Teachers are recognizing more and more that students learn in different ways. FOSS materials have been developed to maximize information-gathering through all senses using various modes of instruction. The materials allow students of all ability levels, including special-education students, to work together as a team and communicate their understanding of science concepts in different manners.

Various learning styles are used when students respond in science notebooks and teachers are able to accept these multiple representations of the same content and process. Students draw and write when they are conducting an investigation. They are recording what they are learning and observing while they are working together in collaborative groups. Teachers are able to acknowledge the quality of student responses even though they are presented in different ways. They are also able to use the students’ responses to build students’ abilities to take their own entries and transpose them into ones that reflect different learning styles. This will help students when they are asked to respond in test-taking situations that often require them to produce a traditional written response.

Teachers can use science notebooks for formative assessment of students’ process skills, content knowledge, and science attitude, especially when science notebooks are used on a regular basis. The teacher is able to identify any misconceptions a student may have acquired. The science notebook provides wonderful opportunities for the teacher to provide feedback to students in ways they can use to improve and increase learning. This ensures that learning is continuous.

Science notebooks also allow students the chance to assess their own learning. When the students are working in collaborative groups they are engaged in the investigation and are responding to their classmates. When they sit down to

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reflect upon the investigation they have just completed, they might realize that there is an aspect they don’t clearly understand and take the time to seek out clarification.

When a teacher reviews a notebook entry, it is evident when a student has mastered content and acquired the skills necessary to complete an investigation. Using the observation checklists (included in the Assessment Masters for a FOSS module) while students are working allows teachers to observe student growth and document information that helps them assess the notebook entries. Science notebooks are a natural link to the formative assessment tools already embedded in the module.

Students use science notebooks when discussions are taking place in the classroom. This takes place after students have had time to reflect and write about what they have done. They use their own notes and data that they have collected for writing a summary of what was learned. These notebooks are available while the teacher is questioning students and whole class discussion is taking place. The teacher can see from what the students have written whether or not they have developed an understanding of what they have done. Students who typically do not participate in discussions begin to take part in the whole class discussion when what they have written has been validated from listening to what other students are saying. They can also add to what they have in their notebooks when they hear other students' responses and know they have omitted that information from their own writing. It is a powerful way to encourage all students to listen and participate. What a wonderful strategy for connecting the curriculum!

**Publications of Interest on Science Notebooks**


A workshop entitled Using Science Notebooks to Increase Student Achievement will be presented during each of the three NSTA Regional Conventions this fall on Fridays, 2:00 – 5:00 p.m. See the NSTA Convention Program or FOSS Professional Development Calendar ([http://lhsfoss.org/fossweb/news/calendar.html](http://lhsfoss.org/fossweb/news/calendar.html)) for further information.
Surfing continued

For Schools and Districts

When you click on the For Schools and Districts icon (the blue box) in the FOSSweb home page banner (or the sidebar menu of the “News” page), these subheadings appear:
- FOSS Information
- Implementing FOSS
- Sales Info

FOSS Information. Clicking on the FOSS Information subhead allows you to link to the information pages at lhsfoss.org by clicking on the “click here” link in the introductory paragraph. You can easily return to FOSSweb by clicking on “FOSSweb for Students” in the top banner on lhsfoss.org.

Implementing FOSS. This link opens up the following subheads:
- Staff Development
- Materials Management
- Communication
- Case Studies
- FOSS in Multiple Classrooms
- Using FOSS Technology
- Schools Using FOSS
- Frequently Asked Questions about the FOSS Program

The first four bullets are the main topics for consideration when implementing the FOSS program in your school or district.

Staff Development provides information gathered from FOSS developers and users to assist you in putting a successful staff development process in place as you implement FOSS.

Materials Management provides a general discussion about managing FOSS materials plus links to

- Tips for Teachers Currently Using FOSS
- Replacement Part Catalog (for both the K–6 and Middle School programs)
- Materials Safety Data Sheets

The sidebar menu that appears under Materials Management provides navigation to a couple of other pages:
- Links, which takes you to information about science materials centers located around the United States.
- Considerations, which includes information about housing and managing materials, inventory and replacement of materials, and more;
- Software, which includes information about the FOSS materials management software, FOSS/Pro and FOSS/Smart, available from Delta Education.

Administrative Support includes suggestions for administrators to help facilitate the FOSS implementation process. The Communication link provides suggestions for publicizing your successful FOSS implementation and science moments to your parents, school, and community.

Case Studies includes several case studies of schools and/or districts of various sizes that have implemented FOSS. The case studies include information about school and district size, teacher training, and other implementation issues.

FOSS in Multiple Classrooms describes the extra equipment and materials needed to use one FOSS kit in more than one classroom at the same time. The pages have been updated to reflect the new editions of FOSS grades K–2 and 3–6. Portable Document Format (PDF) versions of these html pages are also available.

Using FOSS Technology provides the technical details you need to successfully access the FOSSweb site, including the animations, games, and other activities. The information in this section will be updated as new information and practices become available.

Schools Using FOSS is a place where schools with websites that include FOSS information can be listed and linked. If your school has such a website, please let us know and we’ll include you in the list. Send your information to foss@uclink4.berkeley.edu.

Frequently Asked Questions about the FOSS program returns you to the same section in lhsfoss.org that will be described later.

Sales Info

The Sales Info section under For Schools and Districts includes phone numbers and URLs that connect you to sales information at Delta Education. Here you can find a link to K–6 and Middle School replacement parts catalogs.

Info for Teachers and Parents

Now click on the Info for Teachers and Parents link in the yellow box on the top right of the page. (If you haven’t been following along on your computer, then this link can also be accessed from the FOSSweb home page at www.fossweb.com.) This link goes to these three areas:
- Resources
- Materials Management
- Parents’ Corner

The Resources link takes you to the searchable database described earlier in this article. The resource database allows for a search by module or course, title keyword, author, Spanish edition, and/or teacher resource. The database will be updated twice a year and will eventually include entries for video, software, and web pages that relate to all of the FOSS modules and courses. Parents (and teachers who are interested in finding books or other resources for enhancing their children’s science experience will find this database useful. Teacher Guide duplication masters for Students Sheets and Assessments are available by module from the Resources page. You will need to request a password to access the duplication masters as pdf files. To do this send a message with your contact information (name, school, district, address, grades, and e-mail) to foss@uclink4.berkeley.edu.

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Materials Management provides information for teachers and parents to help with materials management in the classroom. Here you will find information about the organisms used in FOSS modules and courses under Plant and Animal Care, as well as information about obtaining organisms under Sources for Organisms. The Materials Management area also provides links for the Materials Safety Data Sheets (between the green bars below the banner) for chemicals and other materials used in FOSS and for the Replacement Parts Catalog. Read the Materials Management introduction and you will find a section on measurement equipment needed in FOSS modules that you may wish to get instead of depending on the availability of a Measurement Module.

The Parents’ Corner includes links to a Module Summary; a guide to Plant and Animal Care; book, video, and software resources; and Tips and Tricks for teaching the module. Parents’ Corner is the source for pdf files of the home/school connections and math problems used in the FOSS K–6 program. These files can be downloaded for use at home by students and parents. The Parents’ Corner also includes a Where Do I Find section to help parents navigate through the FOSS websites.

FOSS Calendar (aka Professional Development Calendar). This link takes you to the FOSS Professional Development Calendar. You can link to the calendar from either the FOSSweb welcome or news pages or the lhsfoss.org banner. The calendar includes dates, information, and application materials for professional development opportunities for teachers and administrators. If you have a professional development opportunity involving FOSS that you would like to publicize on the calendar, send a note with the dates and information to foss@uclink4.berkeley.edu.

FOSS Newsletter. This link takes you back to the Newsletter section located on lhsfoss.org.

That’s FOSSweb in brief. Let’s move on to lhsfoss.org. If you are in the Newsletter area, click on “Home” in the sidebar. If you are on FOSSweb.com, click on “lhsfoss.org” in the footer.

LHSFOSS.ORG

The FOSS site resides on the Lawrence Hall of Science server. One thing that is new is the address (or URL). The lengthier URL (www.lhs.berkeley.edu/foss) has been changed to lhsfoss.org. This address is more concise and also recognizes the FOSS affiliation with the Lawrence Hall of Science.

What will you find when you get to lhsfoss.org? First, there’s a description of what this new FOSS website is all about. We consider this to be the “project” site as opposed to the “users” site on FOSSweb.

Check out the sidebar for these general topics:
- What Is FOSS?
- FOSS Components
- FOSS K–8 Scope and Sequence
- Correlation to Standards
- Research on FOSS and Ongoing Projects
- Newsletters
- Science and Literacy
- FOSS Staff

A link is provided in the introductory paragraphs to information about strategies and materials for full engagement of students with disabilities. It also includes a link to the SAVI/SELP (Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps) program at the Lawrence Hall of Science.

What Is FOSS!

When you click on What Is FOSS? in the sidebar, you link to general information about the FOSS program and a short paragraph about the FOSS philosophy concerning hands-on science education. You also open up several more items in the sidebar menu under What Is FOSS? These include:

- Program Goals (which include Science Literacy, Instructional Efficiency, and Systemic Reform)
- Program Features (including research-based and nationally field-tested program materials; classroom testing; the use of hands-on science and inquiry methods; the assessment system; subject-matter integrations, technology; and program support)
- Frequently Asked Questions about the FOSS Program (questions asked by district administrators, curriculum committees, parents, and teachers are answered by the FOSS developers)

FOSS Components

You will find details here about the FOSS components for grades K–6 and for middle school, as well as components that are incorporated into both programs. For grades K–6 there is information about teacher guides, equipment kits, preparation videos, and Science Stories. For Middle School FOSS, you will find information about teacher guides, equipment kits, lab notebooks, resource books, and the CD-ROMs.

Information about the FOSS assessment system and FOSSweb is found under the category of General FOSS Components.

FOSS K–8 Scope and Sequence

The introduction page to this link includes a Scope and Sequence chart for the 33 modules and courses in the FOSS K–8 program. From here you can link to html or pdf versions of module
Research on FOSS and Ongoing Projects

FOSS is an ongoing research project dedicated to improving the learning and teaching of science. Assessment is a major research focus of the FOSS staff. From the sidebar you can connect to two new web pages.

The Recent Projects page includes information about two projects that are supported by the National Science Foundation to explore assessment through FOSS—the ASK Project and the FAST Project. As these and other projects mature, we will make results and products available through this website.

The Bibliography page provides a link to a pdf version of the FOSS Research Bibliography. As we continue developing the lhsfoss.org site, the bibliography will transform into a searchable online database that will include the various research documents, master projects and dissertations, and other articles that support FOSS and the use of hands-on, inquiry-based science instruction.

Newsletters

The new FOSS site allows you to view html and pdf versions of the current and the previous newsletter. Articles from older FOSS newsletters have now been placed in the FOSS Newsletter Archives. Articles are archived under these categories:

- Grades K–2
- Grades 3–6
- Middle School
- Technology Issues K–8
- Students with Special Needs
- Safety Issues
- English Language Learners
- Life Science
- Earth Science
- Physical Science
- Science and the Community
- Professional Development
- Science and Literacy
- Philosophy
- Science Connections
- Materials Management
- Assessment
- Implementation
- FOSS International

We have already received feedback from users about how easy it is to find useful articles in the archive database. As time passes, we will continue to prepare articles for the archive and possibly expand the topic areas.

There is also a search function included under the Newsletter heading. This function allows you to search for terms in FOSS newsletter articles and hopefully yield an abundance of information.

Science Literacy

The FOSS Resource Database is found under the Science Literacy heading, along with information about FOSS Science Stories, Research

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I have just completed my first year of being the “science mom” in my two older sons’ classrooms at Riviera Elementary in Torrance, California. Last fall, when I was deciding how I should spend my volunteer time in the classroom, I came up with the idea of helping the teachers do science experiments. You see, I have a doctorate in physical chemistry and I worked in an R&D setting for ten years. Now that I am a stay-at-home mom, I have the time to offer my practical expertise and share with the children how much fun it is to do experiments. I don’t think the teachers had ever had such an offer, but they graciously accepted. My big adventure was underway.

It was our first-grade teacher, Mrs. Eads, who first introduced me to the FOSS program. She always did the FOSS Air and Weather Module in the fall. In our first sessions we made wind-detecting devices (pinwheels, streamer flags, etc.), and we went outside to use them. Mrs. Eads knew (from experience) which worked best in our environment, so I would prep all the materials and lead the class in building these devices. This unit also has several experiments that demonstrate to the children that air is “real.” Even if you can’t see it, it is something that is present, it takes up space, and you can use it to physically move other things. These experiments really sold me on FOSS. What you do in the experiment is really quite simple, and yet, you are demonstrating fundamental properties of a gas, one of the three states of matter—and the six-year-olds get it! They never would have understood it if they just read it in a book—a lot of high-school students don’t. Not only did they understand, but they remembered because it was so much fun.

Now, I realize that a lot of people won’t have the same “Wow” response that I did when they do the experiments, but you don’t have to be a “science nerd” to lead the FOSS modules. It is very easy to do this because the manuals are full of background information. They outline how you should lead the class in the investigation and what scientific concepts you are trying to teach. You have more than enough information to be the “expert” for the children. Mrs. Eads’s only complaint about the Air and Weather Module is that the Weather Journals are boring to make here in Southern California—“warm” and “sunny” are just about the only descriptions the children get to use.

My fourth-grade experience started out quite differently. I would either choose experiments that were laid out in the textbook or surf the web to find ones that correlated to what the students were studying. We did some interesting experiments, but I was spending large
amounts of time (and a fair amount of money) to have something set up and ready to go every other week. I was beginning to realize why routine, hands-on experiments do not seem to be on the top of any teacher’s priority list. I was also just realizing that there were stacks of FOSS boxes in the room where we held our monthly PTA meetings. A chart in the Air and Weather teacher guide indicated FOSS did make other kits, some of which seemed appropriate for our class.

So I asked Mrs. Romeo about it. The only reason she hadn’t been using FOSS is that, after California changed the standards for what should be taught in the different grades, the fourth-grade curriculum was spread out over third-, fourth-, and fifth-grade FOSS modules. However, our school district has all the kits; she just needed to make a phone call, and we received everything we asked for. Hallelujah! No more rounding up supplies for 33 children—most of what I needed was in the boxes. Mrs. Romeo was a very good sport about finding a home for the new FOSS kits—there is not much free space in a classroom of 33 children. Since she has used several of the kits, she was also a good resource about which experiments the children usually enjoyed the most.

We primarily used the FOSS Environments Module for her class. At the elementary school level, the children seem to always enjoy the experiments that involve living creatures. The Environments Module has an investigation on hatching brine shrimp. You make four different environments (four different saltwater concentrations) and determine which results in the highest number of brine shrimp hatching. The children loved it. I was able to make a connection with their social studies coursework as well. California children learn about their state geography and history in the fourth grade. The FOSS manual pointed out that we happen to have a natural habitat for brine shrimp in our state, Mono Lake. I went web surfing to learn more information about Mono Lake and found we have a Mono Lake preservation organization that does educational slide shows in the Los Angeles area (www.monolake.org). Mr. Bowling came to our classroom and gave a great slide presentation about the Mono Lake environment, the unique creatures that live there, and how our water usage in the Los Angeles area directly affects these little creatures we had just been hatching in our classroom. He even led them in some science experiments concerning the composition of the Mono Lake water. We all enjoyed his visit.

Nearly all of the first-grade classes at our school use the FOSS Insects Module in the spring. As I mentioned earlier, if it involves living creatures, the children love it—they really eat this one up. I knew from previous experience that the mealworms will take up residence on the children’s desks, and by the time the mealworms are sent home, each child has a new pet to share with his or her family. This year, our first-graders got to learn about mealworms, waxworms, silkworms, and painted lady butterflies. By the end of the module, no one was afraid to touch or handle the insects, quite a change from the beginning. They also could tell you all of the stages of the life cycles of these insects and what characteristics define an insect. (This was primarily due to the daily work of the teacher, Mrs. Barker, not my visits.) The children were very interested in the mating habits of the silkworm moths and the butterflies (some called this “dating”). They were so excited the day they found the silkworm eggs! I think both the children and I appreciate the beauty and complexity of nature more after having the opportunity to closely observe the insects.

I could always tell by the children’s behavior that they really did enjoy science with Mrs. Hall. However, the icing on the cake came near the end of the year in the fourth-grade class. A new student had arrived with only a few weeks left in school. I saw her in the park after school and chatted with her for a few minutes. Then I asked if she had liked the day’s science experiment. She replied, “I loved it. Science at my old school was so boring—all we ever did was take out a book and read. This was fun!” (I, too, absolutely hated science in elementary and middle school for the same reason—it was horribly boring. All we ever did was read.)

This is why I am such a FOSS fan. It provides me with the information and supplies that I need to lead the class in pre-tested, age-appropriate, hands-on science activities, and I don’t need to be an expert. It does still take some time to prepare, but not nearly as much as it does if you are doing everything from scratch. The reward is great. The children are so involved and interested, I know they will remember the information I have taught them for a very long time. I hope that next year I’ll be able to do the same thing for some second- and fifth-grade students, using FOSS of course!  

You can contact Claire Pettiette-Hall by e-mail at jeffreybal@aol.com
An earlier project at Northern Arizona University inspired Doris Tso to consider more translations of FOSS modules into the Navajo language. She was interested in providing a program to teachers and students in the Navajo Nation that was standards-based and employed cooperative learning. A proposal to have six of the Full Option Science System (FOSS) module teacher guides and student sheets translated into Navajo was submitted in the spring of 2000 to the Navajo Nation–Rural Systemic Initiative. The particular modules were chosen for their relationship to the lives of the Navajo people. The subjects covered in the modules were familiar to the Navajo and were an important part of their environment.

The proposal was granted, so a search began across the Navajo Nation for teachers that could speak, read, and write Navajo. This was not as easy as you might imagine, but 15 Navajo teachers were identified to work on the translations during the summer of 2000 for three weeks. This timeframe turned out to be overly optimistic. So the team was given more time on their own to complete the work. The work turned out to be more complicated than originally expected. The team got farther into the task during the fall and the winter of 2000.

One issue was the desire to integrate Navajo cultural themes, but the key problem faced was there were no Navajo equivalents for some of the science words and materials. One way to deal with this would be to go with a description of the terms, which the Navajo language does when it comes to new terms, but that often got long and complicated. With people involved from across the Navajo Nation, some team members thought there was a need to translate the manual word for word. Eventually the team decided to go with the description method of the terms in most cases rather than word for word.

The group was back at it for a week in the summer of 2001 at Whitehorse High School, near Montezuma Creek, Utah. They made a lot of progress during that week when they finalized a format and did a final edit on some parts. Still, no manuals were completed by the end of the week. The group decided to take a rest from the project and picked it up again the following spring.

With so much already invested Doris was compelled to finish the project, so in the spring of 2002 she assigned one person, Kathryn Kenneth of Crownpoint, New Mexico, to complete one unit that could then be used as a prototype. The unit, New Plants, was the nearest to completion. She had been the original translator for that manual and was willing to take the job to its conclusion. Kathryn’s experience, perseverance, and her skill on the computer resulted in delivery of the final draft to Thomas Benally of Rock Point, Arizona, for a final edit. Thomas was one of the original team of translators who had worked on the Human Body Module. The New Plants Module was completed in the summer of 2002. Now with the process figured out, things speeded up with the Water Module completed in the winter of 2002 and Human Body in May 2003. Water Module, completed in the winter of 2002 and Human Body completed in May 2003.

Now the group is finally ready to pilot the use of those three modules in the classroom this fall. Fifteen teachers across the Navajo Nation are eager to pilot New Plants, Water, and Human Body in the Navajo language. These 15 teachers—all of whom are fluent in speaking, reading, and writing Navajo—were brought together in August to get the guidelines and timeline.

Kathryn Kenneth and Thomas Benally will continue with the three other modules, Food and Nutrition, Solids and Liquids, and Air and Weather. Doris hopes to pilot these translations in the same manner. After the three modules are piloted this fall, they will be published for use in the classroom.

The whole Navajo FOSS project was funded by the Navajo Nation–Rural Systemic Initiative, which in turn is funded by the National Science Foundation. The NNRSI is in its last year of funding. Doris and her group hope this project can be an inspiration to others contemplating something similar.
This issue of the Wordsmiths focuses on professional development books for teachers. Take a moment to read the section about the searchable resource database on FOSSweb (page 7). Or check it out at http://flisfoss.org/fossweb/teachers/resources/index.html.

If you would like to recommend books or other resources to our FOSS users, send your title and other information to the FOSS staff at foss@uclink4.berkeley.edu.

Is That a Fact?
Teaching Nonfiction Writing K-3

Is That a Fact? explores a variety of authentic purposes for writing nonfiction, such as describing, explaining, instructing, persuading, retelling, and exploring relationships with others. You will learn how to introduce each purpose using a variety of forms, including letters, reports, poetry, captions, directions, and interviews.

Part One provides a complete overview of teaching nonfiction writing in the primary grades and includes:
- practical ways for organizing nonfiction resources within the classroom;
- how to assist children in collecting information for research;
- ideas for helping children keep their sense of voice when writing nonfiction;
- a chapter on spelling, with examples of how to guide students at each stage of spelling development;
- strategies for assessment and evaluation that guide teaching and learning engagements.

Part Two provides five different explorations that were implemented in actual K–3 classrooms. Each focuses on a specific purpose for writing nonfiction and features:
- examples of whole-class, small-group, and independent instructional engagements;
- a comprehensive assessment rubric that will help teachers tailor instruction to the needs of all learners;
- an extensive resource section that includes lists of books in the exploration, grouped by readability levels;
- answers to the most commonly asked questions about teaching nonfiction writing.

The appendixes include a self-assessment questionnaire, reproducible pages for exploring specific writing forms, and letters to parents.

Teaching Reading in Science
(A Supplement to Teaching Reading in the Content Areas)

You can improve students’ abilities to decipher complex readings, learn new vocabulary, and apply what they have read with the guidelines and strategies in this practical guide.

Continued on page 14
It’s Just Good Teaching
Northwest Regional Educational Laboratory, Portland, OR.
http://www.nwrel.org/msec/resources/justgood.html#assess

The “It’s Just Good Teaching” series includes publications and videos that illustrate and promote effective teaching strategies. Below are just a few of the titles in the series. They can be printed in PDF format.

Teaching Reading in the Content Areas: If Not Me, Then Who? 2nd Edition
http://shop.ascd.org/ProductDisplay.cfm?ProductID=397258

Make the teaching of reading a practical goal in every subject with the principles and strategies from this book. Based on three interactive elements that apply to every reading situation, the authors explain:
❍ why it is good to always relate new vocabulary to the concepts you want students to learn;
❍ how to ask questions so students will make inferences and perceive relationships in what they read;
❍ whether to use a guided or a reflective discussion to promote understanding;
❍ why identifying text structure should never be an important outcome of reading.

You will find 40 strategies that help students in every grade level develop their vocabularies, comprehend informational and narrative texts, and engage in meaningful discussions of what they read.

Assessment Strategies to Inform Science and Mathematics Instruction: It’s Just Good Teaching stresses the key role that ongoing classroom assessments play in effective teaching. The publication gives an overview of the reasoning behind assessment to inform instruction and outlines a variety of strategies, including interviews, observations, writing activities, and student self-assessment. A detailed list of resources—including print materials, online sources, and organizations—is also provided for additional information.

The Inclusive Classroom: Teaching Mathematics and Science to English-Language Learners examines the educational needs of language minority students and offers teachers strategies for meeting their learning needs. The book reviews the differences between social and academic language proficiency as well as the specialized languages of mathematics and science. It highlights strategies that link second-language acquisition techniques with content instruction through techniques such as integrating vocabulary and language learning into thematic instruction, cooperative learning, inquiry, problem solving, and assessment.

Science and Mathematics Standards in the Classroom: It’s Just Good Teaching summarizes the vision and rationale presented in the national standards documents and the current literature on this topic. It offers teachers strategies and resources for implementing a standards-based approach to teaching, including ideas for planning, selecting and designing instructional tasks and units, facilitating discourse, and developing reflective practices. Resources, including print materials, online sources, and organizations, provide educators with additional support for developing standards-based classrooms.
### FOSS Institutes and Workshops

Delta Education will host one-day FOSS Institutes this academic year in conjunction with the NSTA Area and National Conventions. For the three area conventions (Minneapolis, Kansas City, and Reno) 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. 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:

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Delta Education  
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Fax: 1.510.642.7387

### NSTA FALL AREA CONVENTIONS, 2003

<table>
<thead>
<tr>
<th>Date</th>
<th>Convention Location</th>
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<tbody>
<tr>
<td>October 29–November 1</td>
<td>Minneapolis, MN</td>
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<tr>
<td>November 12–15</td>
<td>Kansas City, MO</td>
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<tr>
<td>December 3–6</td>
<td>Reno, NV</td>
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**FOSS K–6 Users’ Meeting (at NSTA)**

Wednesday  
(10/29; 11/12; 12/5)  
For leadership teachers, science coordinators, and administrators from districts who have been implementing FOSS.

**FOSS Middle School Introductory Meeting (at NSTA)**

Wednesday  
(10/29; 11/12; 12/5)  
For leadership teachers, science coordinators, and professional developers who want to get a hands-on experience with a few of the FOSS Middle School Courses.

**FOSS Middle School: Weather and Water Course Overview (at NSTA)**

Thursday  
(10/30; 11/13; 12/4)  
8:00–11:30

**FOSS Middle School: Populations and Ecosystems Course Overview (at NSTA)**

Thursday  
(10/30; 11/13; 12/4)  
1:00–4:30

**FOSS Assessment for Grades 3–8 (at NSTA)**

Friday  
(10/31; 11/14; 12/5)  
8:00–10:30

**FOSS Grades K–6 Introduction (at NSTA)**

Friday  
(10/31; 11/14; 12/5)  
11:00–12:30

**FOSS Middle School: Electronics Course Introduction (at NSTA)**

Friday  
(10/31; 11/14; 12/5)  
1:00–2:30

**Using Science Notebooks to Increase Student Achievement (at NSTA)**

Friday  
(10/31; 11/14; 12/5)  
2:00–5:00

**FOSS Middle School: Planetary Science Introduction (at NSTA)**

Friday  
(10/31; 11/14; 12/5)  
3:00–4:30

### NSTA NATIONAL CONVENTION, 2004

<table>
<thead>
<tr>
<th>Date</th>
<th>Convention Location</th>
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<tbody>
<tr>
<td>April 1–4</td>
<td>Atlanta, GA</td>
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For updated information go to the FOSS Professional Development Calendar at [http://lhsfoss.org/fossweb/news/calendar.html](http://lhsfoss.org/fossweb/news/calendar.html).
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
Lawrence Hall of Science
University of California
Berkeley, CA 94720-5200

The deadline for submissions to the next issue is December 15, 2003. We’re waiting to hear from you.

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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

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Internet: www.fossweb.com/lhsfoss.org/

See you at the NSTA Area Conventions this fall!

New Populations and Ecosystems Middle School Course! To order call Delta Education at 800.258.1302.