We’re pleased to announce that the FOSS Next Generation K–5 Edition has won both the 2016 AAP REVERE Award for Whole Curriculum—Science as well as the coveted 2016 AAP REVERE Golden Lamp Award for best Whole Curriculum overall!

Every year the Association of American Publishers (AAP) asks educational product producers and publishers from all subjects and age levels to submit their curricula to be considered for the AAP REVERE Awards. The REVERE Awards identify and honor excellence in products that support evolving trends in teaching and learning for pre-K–12 students. It is the only program that recognizes learning resources in all media, for all ages, and covers a wide array of educational subject areas and learning environments. Entrants for the 2016 REVERE Awards came from many fields including educational, trade, and magazine publishers; museums; university affiliated programs; nonprofits; membership associations; and game and app developers. From the AAP, The Classroom competition is structured around three major product categories—Whole Curriculum, Supplemental Resources, and Professional Resources—each with their own individual set of subcategories.

The Whole Curriculum subcategory seeks entries that deliver a groundbreaking educational experience through products that feature a new, fresh, or experimental approach—whether in pedagogy and methodology, research and content, media and technology, or other areas. Originality and ingenuity are key factors of honorees in this area.

There are typically many entries into the REVERE Award process, varying by year and by category—there is no direct application for a Golden Lamp. This year, anywhere from two to five finalists were chosen in a given category. Those category finalists are then narrowed further to the category winners and only those category winners are eligible to compete for a Golden Lamp Award.

We’d like to thank everyone whose hard work and dedication went into making the FOSS Next Generation Edition the strong curriculum that it is and AAP for recognizing this through awarding us these two honors. FOSS Next Generation is built on the assumptions that understanding of core scientific knowledge and how science functions is essential for citizenship, that

Continued on page 2
REVERE continued

all teachers can teach science, and that all students can learn science.

When the Full Option Science System (FOSS) began in the early 1990s, the founders at the Lawrence Hall of Science, University of California, Berkeley, envisioned an elementary science curriculum that was enjoyable, logical, and intuitive for teachers and stimulating, provocative, and informative for students. But the developers never envisioned FOSS as a static curriculum. As developers, we worked continuously with teachers and students over the years to gather feedback and to test new approaches, and now FOSS has evolved into a fully realized 21st-century science program with authentic connections to the Next Generation Science Standards (NGSS).

Linda de Lucchi, FOSS co-director, says

Receiving this award confirms our collaborative approach to developing curriculum. The rich partnership between a research institution (the Lawrence Hall of Science) and a publishing partner (Delta Education/School Specialty) started with a shared vision to provide quality science experiences for all teachers and students.

Part of that vision was the importance of establishing long-lasting relationships with educators, parents, and the scientific community to have enduring curriculum implementations with continual improvement.

“We are honored to receive this recognition for FOSS Next Generation from one of the most esteemed awards programs in education,” said Bodie Marx, senior vice president of School Specialty Curriculum (owner of Delta Education, FOSS publisher). Bodie continues, FOSS Next Generation exemplifies our commitment to the power of hands-on, blended learning and, in just a year since its launch, the program has been enthusiastically embraced by educators at school districts across the country. As the FOSS Next Generation family of products grows to include middle grades, we look forward to working with teachers at even more schools as they engage their students in active science learning.

This year marks the 50th anniversary of the REVERE Awards. FOSS is honored to be recognized for its continuing commitment to science, both in and OUT of the classroom. FOSS is over 25 years old; it evolves thoughtfully over time, as do the educators who use the program. It provides a strong foundation that can be customized to serve many different educational situations and students of varied backgrounds and abilities.

We have seen schools use FOSS as the core of their curriculum and these science-centered schools are some of the most vibrant learning communities—learning is dynamic, relevant, and there are equal opportunities for all to engage. Every school has the potential to become a science-centered school with FOSS!

FOSS is honored to be recognized for its continuing commitment to science.
FOSS Next Generation Middle School is Here!

By Jessica Penchos, FOSS Middle School Coordinator, The Lawrence Hall of Science

The FOSS Middle School team is ready to announce that the Next Generation Edition for FOSS grades 6–8 is available! If you are currently a FOSS Middle School Second Edition user, you will receive automatic access to a digital upgrade from Second Edition to FOSS Next Generation Middle School. Here’s how it works.

FOSS Middle School Next Generation Features

The FOSS Next Generation Middle School Investigations Guides include point-of-use references to the instruction relating to the three dimensions of the NGSS Performance Expectations.

**PURPOSE**

System: Crosscutting prompts students to solve a mystery—a disease mystery. On the path to diagnosis, students encounter the levels of complexity in humans: cell forms tissues, tissue forms organs, organs form systems, and systems form a multicellular organism, the human. They discover how organ systems interact, each dependent on all the others for its functions.

**Content**

- Multicellular organisms are complex systems composed of organ systems, which are made of organs, which are made of tissues, which are made of cells.
- Cells are made of cell structures, which are made of molecules, which are made of atoms.
- The human body is a system of interacting subsystems (circulatory, digestive, endocrine, excretory, muscular, nervous, respiratory, skeletal, and others).

**Practices**

- Obtain, evaluate, and communicate information regarding a single human organ system.
- Diagnose a disease affecting a patient by evaluating research information and evidence.
- Engage in argument from evidence to defend conclusions.

Three Dimensions: Each investigation addresses the three dimensions of NGSS. The Science and Engineering Practices (SEP), Discipline Core Ideas (DCI), and Crosscutting Concepts (CCC) are color coded throughout each investigation.

FOSS Next Generation Middle School includes new format features, too. The Quick Start Guide simplifies the process of getting ready for the investigation. Forthcoming Teacher Prep Videos for each course will describe and elaborate the essential materials and conceptual challenges in each investigation. And downloadable, modifiable teaching slides are provided for each part of each investigation, giving you a jump-start in preparing for the lesson.

Continued on page 4
Next Generation continued

FOSS Next Generation Middle School also does more to support literacy in the science classroom. Each in-class reading guide provides connections to Common Core ELA standards, including specific strategies to support your instruction.

Each investigation in FOSS Next Generation Middle School features a section called “Teaching and Learning about…” that provides developmentally appropriate context for the science and engineering practices, disciplinary core ideas, and crosscutting concepts that students will be exposed to and highlights why the investigation topic is important and relevant to their daily lives.

The investigation’s conceptual flow—the path that students follow to construct more complex understanding—is outlined with a visual diagram.

In-class reading guide: Investigations guides include reading guides for FOSS Science Resources books. Each reading guide includes specific literacy strategies to scaffold students’ use of the text.

All of this comes with the features you already expect from FOSS: carefully designed instructional sequences featuring hands-on experiences, opportunities for sensemaking in student notebooks, vocabulary development, and rich online resources including streaming video and simulations. And, the middle school courses are based on carefully developed learning progressions that represent the FOSS K–8 program.
Adopting the New Edition

FOSS Next Generation Middle School includes 12 courses, six of which are brand new half-length courses. Each new course takes 5–6 weeks of instruction. Two new half-length courses require the time of a typical FOSS middle school course.

The remaining six FOSS Next Generation Middle School courses are updates to the existing Second Edition Courses. A note to our Second Edition users: there are no changes to course equipment, but the instructional procedures are slightly modified to better support three-dimensional instruction. You will receive free, automatic online access to the new *Investigations Guide* and *Science Resources* book when updated courses are released. You may choose to purchase updated hardcopy print materials at a discounted cost, or you may continue to use the Second Edition Science Resources books. For our First Edition users, you can purchase conversion kits to smoothly transition to the new program.

Course Availability for FOSS Middle School

Second Edition titles are all available now:
- Planetary Science
- Earth History
- Populations and Ecosystems
- Chemical Interactions
- Diversity of Life
- Weather and Water

*Note: All Second Edition titles will also be available in Next Generation Edition.*

Next Generation titles available for the 2016–17 school year:
- Human Systems and Interactions
- Heredity and Adaptation
- Waves
- Diversity of Life
- Electromagnetic Force
- Weather and Water

All remaining FOSS Next Generation Middle School titles will be available for the 2017–18 school year. If you would like to preview or pilot a forthcoming course, contact your Delta Education eSales Manager. We can't wait for you to experience the newest edition of FOSS Middle School!

Contact your Regional Sales Manager today for more information or to schedule a presentation.
Beat the Summer Achievement Loss with a Summer Science Academy: Portland, Maine

By Erica Beck Spencer, FOSS Curriculum Specialist, The Lawrence Hall of Science

Imagine having time to teach all of a FOSS module without rushing. Imagine also having time to create authentic interdisciplinary extensions, being able to extend classroom experiences by taking curriculum-related field trips, centering your literacy program on the science content, and even doing fun crafty projects connected to science. During the school year, you ask? Keep dreaming! There are very few teachers across this country who would be able to find the time to do all of this with all of their other responsibilities. But three years ago, Portland, Maine, wanted to beat the summer achievement loss by engaging children in something they knew the students would love—science! They chose FOSS as the center of their curriculum for the Summer Science Academy (SSA), which served several low-income schools in the city.

Here’s how Portland, the most diverse city in the state of Maine, was able to make this happen for so many deserving incoming first–fourth graders. Read on to discover if they were able to reach their goal to keep students from sliding backwards academically during the summer, what lessons they learned from year to year, the specifics of the program, and to explore the day-to-day operations of the SSA.

The John T. Gorman Foundation

The John T. Gorman Foundation is interested in advancing ideas and opportunities that improve the lives of disadvantaged people in Maine. In 2013, the Foundation put out a request for proposals that would address the issue of summer learning loss in reading. The Foundation ultimately supported Portland, Maine, and three other districts across the state serving predominantly low-income or disadvantaged students to create initiatives that would...
reduce the summer achievement loss typical of low-income students.

The grant covered the cost of paying teachers and assistants who would lead the program with students, the adoption of curriculum materials, as well as the funds to create an environment and develop incentives to encourage children to come each week. The Foundation also offered technical assistance to support program development and implementation. Lunch and breakfast were provided free to students, and students were able to ride school buses to and from the SSA each day.

**The fundamentals of the program**

When the program was first being planned in 2013, Portland had not adopted the FOSS curriculum and, for that reason, the SSA was able to use the FOSS modules of their choosing. In the first year of the program, the team thought the **FOSS Air and Weather Module, Third Edition**, a module with a lot of outdoor activities, would be an excellent place to begin, with exciting, active learning experiences for all students in grades 1–4. The committee searched the list of recommended nonfiction and fiction books on FOSSweb to supplement the module. They purchased books for students as rewards for attendance. The books aligned to the air and weather theme and matched the students’ reading levels.

The Foundation presented research from the National Summer Learning Association (NSLA) to the planning committee that suggested that 80–100 hours of summer programming is the sweet spot for preventing academic backslide during the summer months. In order to reach this target, students would attend camp for four hours daily for five weeks. Other strategies that the NSLA recommends for summer success include:

- a camp-like feel;
- parental involvement;
- high-quality teachers; and
- regular attendance.

Each year, several schools in the district hosted camps. Each school had between two and six classrooms depending on the need and the number of children they were able to recruit.

A typical day at SSA begins with breakfast at 8:00 a.m., followed by participating in camp stories and songs as part of morning meeting. Some of the songs were created by the children or teachers and connected to the curriculum (see side bar). Students engaged in guided reading groups and independent reading time. Students also played math games and, of course, there was time for science investigations. The day ended with a shared lunch. School buses picked students up and brought them home if a guardian wasn’t able to pick them up. The goal was to maintain the camp-like atmosphere to

*Continued on page 8*

**The Weather Song**

Written by Kathy Feenstra, first-grade teacher at Reiche Elementary

(Sung to the tune of “I Love Mud!”)

Rain, rain, I love rain!
I’m absolutely, positively wild about rain!
It falls from the clouds.
Then goes up as a gas.
Beautiful, fabulous, super duper rain!

Clouds, clouds, I love clouds!
I’m absolutely, positively wild about clouds!
There’s cumulus and cirrus,
And way up high is stratus!
Beautiful, fabulous, super duper clouds!

Wind, wind, I love wind!
I’m absolutely, positively wild about wind!
What is the wind speed?
Check the anemometer.
Beautiful, fabulous, super duper wind!

Bubbles, bubbles, I love bubbles!
I’m absolutely, positively wild about bubbles!
They float up in the air
You can pop them everywhere!
Beautiful, fabulous, super duper bubbles!
Summer Science Academy continued

keep students coming back each day. Unlike school, attendance was not mandatory, but just like during the school year, attendance was essential to the goals of the program. So how did they keep the children coming back? They kept it fun and rewarded attendance weekly. Perfect attendance during the first year earned the students a book each week. During the subsequent years, they also provided incentives connected to the science theme such as flying disks, parachute people, foam airplanes, bubbles, and rubber slingshot frogs. Students loved them.

During the three years of the grant, the returning SSA staff took more responsibility for designing the summer program at their school. The educators involved in teaching the program got better and better at tweaking the parts of the program to keep them coming back. By year three, the FOSS Air and Weather Module was used again at some schools. Field experiences were an essential part of the program that kept students engaged in the learning and looking forward to coming. Examples of the field experiences were:

- A visit from local meteorologists Craig Miller and Todd Gutner from a local TV channel;
- A field trip to the East End playground and beach;
- A ride to the Portland International Airport to view planes taking off and landing;
- Skye Toys shared kite-flying experiences and assisted participants in making kites a tad fancier than the FOSS kites they had already made;
- Eli’s Soda, a local company, provided a donation of root beer for students to make root beer floats—cloud floats;
- A trip to the Portland Museum of Art to see weather in art; and
- Bus trips to Fort Williams to fly kites.

One group of students was inspired to film their own weather report after meeting one of the local meteorologists. While all of these experiences were fun, one educator involved with the program stated, “the biggest excitement came from the [FOSS] experiments students worked on: balloon rockets, parachute making, water pressure tests, bubbles and air movement, and flying a kite. Here, students learned quickly to cooperate with their classmates and solve problems.”

Parents were invited to some of the special events listed above as well as to the culminating events such as one school’s weather-themed literacy lunch. Guests were treated to hot dogs and weather-related desserts such as “Cloudy with a Chance of Meatballs” cupcakes, cloud Jell-O, rainbow fruit kabobs, kite crispies, watermelon suns and umbrellas, and cloud punch. Students prepared all of the treats. At another school, families, staff, and students gathered to watch videos and show a slide show of the students’ learning in action, followed by each class’s performance of original songs about weather and air.

PD for teachers

During the first two summers teachers engaged in a full-day module-specific training that incorporated several of the features of our programming including science notebooks, science-centered language development, and taking FOSS outdoors.

Were they successful?

By the end of year three at Harrison Lyseth Elementary School, one of the participating schools, 100% of the students attending the academy maintained or increased their reading levels. By the end of the program at Howard C. Reiche Community School, 97% of students had maintained or increased reading levels. At all schools, they were successful at achieving their carefully sought after balance—teachers were both serious about improving students’ academic skills and also cared deeply about maintaining the summer camp feel. The SSA was able to provide a well-rounded learning experience that stemmed the tide of summer learning loss.

And on they go!

When the grant period concluded, Portland Public Schools committed to sustaining the program at both Harrison Lyseth Elementary School and Howard C. Reiche...
Community School for the summer of 2016. They once again used FOSS as the basis for their programming to provide the context for their literacy instruction for their SSA. Reiche used the FOSS Plants and Animals Module; Lyseth plans to use the FOSS Air and Weather Module again. The schools invited up to 100 students in grades 1–4. It seems the schools have found the right balance of creating a camp-like feel while also trying to push academics ahead. The test scores and attendance attest that they were successful.

As previously noted, the exciting summer work done in Maine was inspired by the National Summer Learning Association, the only national nonprofit focused on narrowing the achievement gap by providing all youth access to high-quality summer and after school experiences. Their mission, as noted on their website, is three-fold:

1. To expand access to those who need it the most and collaborate with other organizations to improve summer and afterschool offerings;
2. To build awareness of the need to keep all kids learning, safe and healthy; and
3. To strengthen policy by bringing leaders across the country together to reach more equitable summer solutions for excellence in education.

If we’re focusing on formative assessment, how are we supposed to give grades? The two most important reasons that FOSS focuses on formative assessment are because (1) research says that formative assessment is one of the few things that can actually improve student achievement, and (2) formative assessment practices contribute to a growth mindset that research also shows produces learners who are more successful. That said, it is still a common practice in schools to give students grades. So how do you give grades if the focus is on formative assessment?

**Embedded Assessments.** Most embedded assessments are part of the science notebooks students create. Notebooks need to be a place where students can express their ideas, right or wrong, with no punishment (or external reward) for doing so. Students need to be able to write what they are really thinking and not just what they think the right answer might be, even if they don’t believe it or don’t understand how it can be so. Notebooks need to remain a place that students can have private dialogues with their teachers and where they can continue to revise their ideas (as a scientist does) as more information becomes available.

If you need a grade based on the notebook, consider a derivative product. Have students create a product based on notebook entries that they have had more time to process—a piece they know they are turning in for a grade. Students turn this product in on a separate piece of paper or index card that is not part of the notebook. It could be the answer to a focus question, part of a procedure, or a report about a practice or crosscutting concept that was used in the lesson. The most important thing is that it is clearly separate from the science notebook.

**Benchmark Assessments.** The Survey, of course, should never be scored with a grade in mind. It is in fact, a survey—a way to find out what students know before instruction begins so that you, the teacher, can do a better job of planning the module based on students’ prior knowledge. The I-Checks, can be used for grades, but we suggest a not-so-traditional process.

If you are considering starting a summer learning program we advise you to reach out to the NSLA (link below). No matter what the season, during the school year or during the summer, getting kids excited about learning has the potential to positively affect the lives of all children.

To learn more about NSLA “Smarter Summers, Brighter Futures,” visit their website: [http://www.summerlearning.org](http://www.summerlearning.org).

This article does not constitute an endorsement of FOSS products or services by the Portland Public Schools.

The Assessment Corner

By Kathy Long, FOSS Assessment Coordinator, and Diana Vélez, FOSS Professional and Leadership Developer, The Lawrence Hall of Science

Students take the I-Check, and the teacher codes them or reviews the reports from FOSSmap. The teacher then decides the best methods for providing feedback that will help students improve their thinking. After students have had the opportunity to reflect on the items and had a second chance to revise answers, they turn in the whole assessment, or perhaps just a few items to show the teacher how their thinking has changed, knowing that this second effort is what will actually be graded. The Posttest can be treated as a final grade without revision, or can be used following the same process as the I-Checks.
My continuing ruminations regarding the interpretation and implementation of the Next Generation Science Standards has exposed yet another dimension of the NGSS vision. We know the framers of the NGSS have created a vision of student engagement with science as a three-pronged intellectual embrace of the subject: 1) familiarity with a comprehensible, reasonably restricted, suite of science disciplinary core ideas; 2) a robust and authentic description of a set of instructional rules of engagement—the science and engineering practices that define scientific inquiry and the application of scientific knowledge to solve human problems; and 3) a tool kit of crosscutting concepts to knit students’ disparate accumulation of knowledge of the natural world into a unified fabric. It is a marvelous vision—challenging to articulate and daunting to realize.

So I continue trying to apprehend a vision of NGSS implementation. What are some of the critical understandings that can help us move forward effectively? First, I needed to understand how we should embrace the disciplinary core ideas. A Framework for K–12 Science Education by the National Research Council (2012) has laid out a matrix of fundamental scientific knowledge defining the dimensions of basic scientific literacy—preparation for: citizenship; contemporary employment; and post-secondary education. The list of core ideas is heady and robust, particularly for the novice teacher.

Let me do some parsing. We know that science is the systematic quest for understanding regarding the objects, systems, and interactions in the natural world. The Framework and the NGSS suggest a menu of the “objects, systems, and interactions in the natural world” in the discussions of the DCIs, and the rules of engagement with those ideas as defined in the narrative surrounding the science practices. The problem is partly in the lofty lingo in the guiding documents. For instance, in physical science:

PSI: Matter and its Interactions. (How can one explain the structure, properties, and interactions of matter?)
   - PSI.A Structure and Properties of Matter (How do particles combine to form the variety of matter one observes?)
   - PSI.B Chemical Reactions (How do substances combine or change (react) to make new substances?)
   - PSI.C Nuclear Processes (not investigated at the K–8 level).

A typical elementary-school teacher may not know how to teach to these lofty guidelines. But we have help. In science parlance, objects, systems, and interactions in the natural world are categorically phenomena. A phenomenon is a natural occurrence, circumstance, or fact that is perceptible by the senses . . . an observable event. In popular, conversational lingo, something that is phenomenal is marvelous, incredible, astounding or in some other way exceptional. Scientific phenomena are not necessarily stunning (although they may be)—most of the time they are pretty mundane and well within the everyday experience. For instance, a handful of everyday phenomena that are worthy of systematic elementary-school inquiry include, dissolving, melting, evaporation, and germination. These may seem on the surface to be pretty passive, like watching paint dry and watching grass grow. But for a fact, a systematic investigation of the phenomena dissolving, melting, paint drying, and seeds germinating can be stimulating and revealing when approached with the heart and imagination of a scientist. So the trick to enacting an effective engagement with the NGSS is cunning and thoughtful selection of phenomena for students to investigate. The phenomena don’t have to be phenomenal, but they do need to be selected intentionally so that they are compatible with the goals elaborated in the Framework.

Engagement with phenomena is at the heart of a traditional Lawrence Hall of Science approach to school science that has been promoted, recognized, and appreciated by us old-timers as “hands-on science.” For us, “hands-on” has always meant engagement with real-world phenomena, often demeaned by detractors as “just play.” It is satisfying to see our commitment to active-engagement with phenomena supported in the Framework and reinforced in the NGSS. Using phenomena as the point of entry into scientific inquiry adds a substantial measure of authenticity to the enterprise. Authentic engagement with phenomena brings benefit for both teachers and
students. Students are more motivated when they have phenomena (objects, systems, and interactions) as their entrée into science study, and there is enhanced opportunity for deeper thinking about explanations and propositions about how the world works—real science. The voice in the FOSS Investigations Guides typically does not explicitly identify the phenomena that are the central subjects of inquiry, but in every part of every investigation the central phenomenon is referenced implicitly in the focus question that guides instruction and frames the intellectual work.

The images on this page are all images students encounter in the FOSS Science Resources books for the Solids and Liquids and Structures of Life Modules.
Bell Gardens Elementary Receives Prestigious California Gold Ribbon School Award for Science and ELD Program

By Natalie Yakushiji, FOSS Professional and Leadership Developer, The Lawrence Hall of Science

Bell Gardens Elementary School, one of 17 elementary schools in the Montebello Unified School District in Southern California, has recently been honored as a recipient of the California Gold Ribbon School Award. Previously known as the California Distinguished School Award, this award … recognizes California schools that have made gains in implementing the academic content and performance standards adopted by the State Board of Education. These include the California Standards for English Language Arts and Mathematics, California English Language Development Standards, and Next Generation Science Standards. Schools apply for the award based on a model program or practice their school has adopted that includes standard-based activities, projects, strategies, and practices that can be replicated by other local educational agencies. (California Department of Education website)

So, how did Bell Gardens come to earn this award? Their journey toward science academic success is truly inspiring.

Bell Gardens Elementary (BGE) is a Title I school in Montebello, California, a city about 10 miles east of Los Angeles. It is home to approximately 1,150 pre-K–5 students, 65% of whom are English language learners (ELL). Back in 2008, there was little to no science taught at BGE. The district’s science curriculum was a textbook-based program. There was no collaborative planning among teachers and no materials for students to learn science by doing science. Teachers did not feel confident teaching science, as they were not comfortable with the content and students had difficulty understanding academic science vocabulary. In the summer of 2008, BGE began its partnership with California State University, Long Beach (CSULB) through a California Postsecondary Education Commission (CPEC) grant that focused on science content and language development. A team of BGE teachers was chosen to be the core team for the grant. The grant provided intense professional development around science content, which they learned by attending summer institutes with CSULB faculty. Teachers were able to feel more confident to teach science once they were more comfortable with the content. Another focus of the grant was developing a system to promote student language development. Workshops on implementing and assessing science notebooks and creating Professional Learning Communities at the school helped change the way teachers taught and assessed science.

This team of teachers returned to school excited to teach science and to impart what they learned with their colleagues. Unfortunately, there was still one hurdle to overcome. There were no instructional materials for students to actively learn science.

Enter the FOSS Leadership Academy (FLA), a three-year (2009–2011) intensive professional development academy for schools/districts implementing the FOSS California Edition. The FLA was a joint collaboration between the development team at FOSS and WestEd K–12 Alliance. The FLA had already started its first cohort of schools or districts in 2007 and was in the process of choosing participants for the second cohort. Jo Topps was already familiar with the work happening at BGE as part of the CPEC grant. Jo is an adjunct faculty member at CSULB. As it happens, she is also the Regional Director for the greater Los Angeles region of the K–12 Alliance. Jo saw the eagerness of the BGE staff to improve its science program and advocated that they be admitted into the FLA Cohort II even though they were not a FOSS school or district at the time. So, in the summer of 2009, four teacher leaders (Leslie Hiatt, Araceli Caldera, Melinda Molina, and Ricardo Ramirez), along with principal Gudiel Crosthwaite, attended their first of three week-long summer institutes to receive professional development on implementing the FOSS California Edition, instructional strategies for teaching science using a hands-on, inquiry-based approach, and strategies for working with colleagues and bringing them on board. Professional development continued during the school year with two weekend sessions and four Technical Assistance days per school year. Delta Education Sales Manager, Maggie Ostler, provided BGE with FOSS California Edition modules for the third and fourth
grades during this first year and BGE teachers jumped right in using the materials and using the strategies they were learning in the Academy.

By year two of the FLA, BGE was seeing huge gains. Attendance soared in the classrooms that were using FOSS. Where truancy used to be a problem, students in FOSS classrooms were posting attendance percentages of 94%. Students were producing intricate science notebooks and having group and class discussions around their science experiences. Teachers were excited to teach science and were impressed with the strides students were making in English Language Development. They wanted more. Leslie described the experiences and results to FOSS Co-Directors Linda De Lucchi and Larry Malone at the year two FLA summer institute. Larry and Linda were so impressed with her enthusiasm that they worked to get FOSS CA modules for all grade levels at BGE.

Now six years later, science instruction is still going strong at BGE. Montebello Unified School District is still not a FOSS district and, in fact, has not finalized its plans on how to implement the Next Generation Science Standards. So BGE has made its own plans. They have a strong core science committee (which includes two staff from the original FLA team: Leslie Hiatt and Araceli Caldera) that provides science professional development two or three times a year. PD topics are teacher-driven and teacher-led, including PD sessions on science notebooking, science and ELD, and NGSS introduction and implementation. Science is taught every day in every classroom at BGE for at least 60 minutes a day and also serves as one pathway for language acquisition development. As students are engaged in the active investigation of science, they become immersed in academic language, and as they discuss their observations and discoveries, they develop language skills.

Current BGE principal James Sams is a strong science advocate. He has set aside site funds to maintain this model, provide ongoing professional development, and purchase science materials. BGE has already adopted FOSS Next Generation for grades K–2 and hopes to implement grades 3–5 in fall 2016.

BGE submitted their application to be considered a Gold Ribbon school in October 2015. Honorees must show that their program demonstrates exemplary achievement in implementing standards. BGE decided to showcase their combined science and ELD programs. BGE’s overwhelming supporting evidence was their increased CELDT score data and reclassification rates of their EL students as well as the enthusiasm that came forth when personal interviews were conducted with staff, parents, and students.

Fourth- and fifth-grade teacher Leslie Hiatt, who has been with this project since the beginning of the CPEC grant, has seen such a change in both students and teachers.

Student attendance has increased when we started teaching with FOSS. Students want to be at school now. Teachers are excited to teach science and when it comes time to discuss what professional development to focus on each year, science is always a top choice. Teachers are also leading the effort.

A lot of our professional development is not only chosen by our staff, it is led by our staff as well.

Congratulations Bell Gardens! You’ve accomplished a lot and are definitely deserving of this award. We look forward to more scientific accomplishments from your students and staff!

FOSS on NSTA TV

During the Spring 2016 NSTA annual conference, FOSS was featured in a new video from NSTA TV. The video showcases the FOSS connections to the University of California, Berkeley, the Lawrence Hall of Science, and the classrooms we regularly collaborate with to continue our work. Watch the video now on the Delta Education website.

www.deltaeducation.com/foss/how-foss-works
FOSS Consultant Highlight: Kristen Moorhead
By Diana Vélez, FOSS Professional and Leadership Developer, The Lawrence Hall of Science

Ever wonder who those awesome people are who show up at your district to share their knowledge, experience, and enthusiasm for teaching FOSS? I caught up with one of those shining stars at a recent meeting for FOSS consultants to find out what makes her special. Kristen Moorhead lives in Mesa, Arizona, and often works with Richard Pacheco, the Delta Education Sales Manager for parts of California, Arizona, and Nevada.

**Diana:** How do you see your role as a FOSS consultant?

**Kristen:** I want to make sure every teacher feels not just prepared, but excited about teaching FOSS. Many of the elementary teachers we encounter have never taught hands-on science and can be somewhat apprehensive. I’ve heard responses such as, “These boxes landed in my room and I don’t know what to do with them,” or “I don’t really like teaching science because I’m worried I don’t know the answers to the students’ questions.” It can be challenging, but we find that most teachers are thrilled to roll up their sleeves and dive into inquiry.

**Diana:** What motivates you to do this type of work?

**Kristen:** I enjoy the opportunity to think through the science with other teachers. It’s great when teachers are able to take the time to be curious, to wonder, and then experience the power of constructing their own understanding. I gained content knowledge through teaching FOSS, and I want others to obtain that same confidence in their own science teaching.

**Diana:** What challenges do you face?

**Kristen:** I’m always looking for ways to get teachers to interact with the FOSS program so they understand the richness built into it. For example, I was doing a training on Soils, Rocks, and Landforms, and at the end, a teacher wrote, “I used to think teaching about rocks was boring, now I think it’s interesting!” I love when people can see ordinary things (like soil) in a new light.

**Diana:** Tell me about your background.

**Kristen:** I’ve always been involved in science education. I majored in elementary education and then did graduate work with an emphasis in secondary science. After college, I worked for the Peace Corps on the Caribbean island of Dominica. My assignment was to support K–8 teachers doing hands-on science in a one-room schoolhouse. This experience gave me a lot of insights about the interconnectedness of culture and nature. For example, in their agriculture-based society home vegetable and flower gardens are part of the culture, but classroom science experiences were disconnected from this cultural practice. So, I worked with teachers to shift their practices from lecturing about flower structure and function to investigating flower structure and function in the schoolyard.

**Diana:** Wow! That sounds very challenging. What was your take away from this experience?

**Kristen:** I learned that in order to support change you have to pursue opportunities to share new ideas. You need to meet people where they are at their comfort level and figure out how to take advantage of the momentum towards change when those sparks of interest are ignited.

**Diana:** How did you come to be a FOSS consultant?

**Kristen:** After returning from the Peace Corps, I taught elementary school in Denver, Colorado, and then middle school in the Madison Elementary School District in Phoenix, Arizona. I was determined to do inquiry-based science with my students, so I pulled from different resources to make it happen. When the opportunity to pilot the FOSS Mixtures and Solutions Module came my way, I knew immediately that this is what I wanted to teach. During the training we were told, don’t answer the students’ questions. Let them discover. And, sure enough they did. When MSD chose to adopt FOSS, I signed up right away to support the implementation process.

Kristen enjoys the mountain air in Colorado with her son.
**FOSS Science in Pocatello, Idaho**

By Bridget Flynn, Jefferson Elementary School

What if I told you that science did not have to be taught as an isolated subject? That you could integrate science as part of your English language arts (ELA) time? Or as part of your mathematics block? That is exactly how I use my **FOSS Weather on Earth Module** in my fourth-grade classroom.

How will Naya Nuki be affected by the weather on her journey home? What do we want to know about weather? These are just a few questions that I ask my fourth graders as we begin our study of Earth’s weather. Concurrently, they are reading *Naya Nuki: Shoshoni Girl Who Ran* (1983) by Kenneth Thomasma as part of Idaho’s history and as a vehicle to ELA skills. Students quickly turn to talk with partners or small groups. They discuss and argue as they write questions, predictions, and observations in science notebooks. When we stop to share, I add their queries and content words to anchor charts in our room. What season is Naya Nuki travelling in? What is the difference between weather and climate? What’s in the air? What will happen if it’s too hot or too cold (temperature)? Later, they will collaborate to complete hands-on experiments—both inside and outside—as the weather unit progresses.

Jefferson Elementary is a K–5 Title I school (high poverty) in Pocatello, Idaho. We have approximately 400 students, with three classes per grade level. Our staff is committed to delivering engaging lessons as a way to motivate our students to be involved in their learning. Naya Nuki is engaging because the students have so many connections to the title character’s story. She is their age, and they can imagine themselves in her shoes. She is kidnapped, then escapes, and bravely makes her...

Continued on page 16
Students are also locally connected since Pocatello is only 20 minutes from Fort Hall, site of the Shoshone-Bannock Indian Reservation. When we tie the study of weather to our reading and writing and history, we tap into the best motivator of all: curiosity!

Students are naturally curious about the weather since it’s happening right outside all the time. It is also simple to integrate weather with history. What affect did weather have on wars? If the weather had been different could it have changed the outcome? How did the weather impact Naya Nuki’s journey? Did climate influence the Native Americans’ culture (food, shelter, clothing)? Does it influence our culture now? What kind of weather challenges did pioneers experience on the Oregon Trail? With little or no prompting, students will come up with focus questions they are eager to research.

Jefferson’s fourth grade was able to purchase the FOSS Weather on Earth Module, with enough materials for three classes, through a classroom makeover grant from Idaho National Laboratories. Additionally, an outdoor weather station was installed and connected to school computers. This allows us to view live and historical weather data from right outside our door.

FOSS differs from traditional science primarily in the quality, and quantity, of experiments (or investigations, as FOSS calls them). Virtually every lesson has a simple, yet significant, experiment that adds to the development of specific science concepts. Each lesson includes a focus question and opportunities for students to construct knowledge through discussions, writing, and observations. After two or three opportunities for hands on explorations, students are presented with a short reading. The provided FOSS Science Resources book is concise and especially engaging as it directly relates to investigations recently completed by students. I also HIGHLY appreciate that FOSS includes resources for science notebooks such as, procedures for experiments, and copies of questions to answer. Another useful resource is the online component, which includes videos and interactive whiteboard flipcharts for each lesson.

We’ve found it very effective to use FOSS by integrating it with ELA and math standards (in our case, Common Core State Standards). In my class, students are expected to interact with the text, applying the Reading for Information standards. We summarize, annotate, look for evidence, make inferences, and even compare with other informational or fiction texts about weather. FOSS is also perfect for applying Measurement and Data math standards. Many of the investigations call for learners to gather and organize data. These data can then be translated as a graph or chart, or even a written summary. We also used data from the weather station for various math tasks and to compare to student observations.

Our FOSS Weather on Earth Module made it possible for Jefferson’s fourth graders to learn about their weather, in our town, and at our school. It helped them understand the effects that weather might have on the real journeys of the pioneers, and how it might be part of plot in fiction. It opened their eyes to new career ideas, especially after a meteorologist from a local television station visited our class. In the future, I plan to extend our learning by allowing students to choose a research topic that goes beyond our usual scope. Learning goals that are self-generated will be even more engaging. Students could study the weather of other countries, or even planets! They could explore climate change or extreme weather events. What fourth grader wouldn’t love to research tornadoes or dust storms on Mars?

Bridget Flynn teaches science to all three fourth-grade classes at Jefferson Elementary in Pocatello, Idaho. She has taught fourth and fifth grade for eight years.
**Mrs. Carter’s Butterfly Garden**  
By Steve Rich  
(FOSS Plants and Animals, Insects and Plants, Structures of Life)

Young students will enjoy this story of how former First Lady Rosalynn Carter designed a public butterfly garden and nature trail at her home in Plains, Georgia. Engaging photos and text describe the butterflies that visit the garden and trail, including monarchs that pass through on their yearly migration to Mexico. The book will inspire and encourage young gardeners to plant a habitat of their own for these beautiful and important pollinators. Teachers will appreciate the resources provided to delve more into butterfly habitats, conservation efforts, and the Rosalyn Carter Butterfly Trail. Other resources include those of the author, Steve Rich, who is an experienced outdoor science educator in Georgia.

**Ada Byron Lovelace and the Thinking Machine**  
By Laurie Wallmark  
Illustrated by April Chu  
(FOSS Energy)

Readers will be inspired by the life of Ada Byron Lovelace, a mathematician and scientist who wrote the first computer program at the age of 27 in 1843. Born to Lord Byron, the great poet, and Lady Byron, a mathematician with a passion for geometry, young Ada spent her days consumed with writing equations in her journal. She used her notes and numerical thinking to design a flying machine at 12 years old! Beautiful, soft, illustrations enhance her remarkable story of courage, creativity, and inquiry. Laurie Wallmark, herself a computer scientist, describes Ada’s life in a warm, narrative style that makes you feel close to this young woman’s challenges and accomplishments.

**Next Time You See a Pill Bug**  
By Emily Morgan  
(FOSS Animals Two by Two, Plants and Animals, Insects and Plants, Structures of Life)

Detailed, close-up photos immediately draw you into this book about pill bugs. Often overlooked by adults … but never by children, pill bugs possess structures and behaviors that make you want to observe them for hours! Through questions and text, the book
Resource Roundup continued

encourages readers to explore how pill bugs move, where they live, and what they eat. Do pill bugs have legs? How many? Are they an insect? Sow bugs look like pill bugs but are they the same? What are other crustaceans? In a note to parents and teachers, the author suggests first-hand experience with pill bugs. The book should be read afterwards to spark further exploration and learning about this fascinating creature. Suggestions for more activities are provided as well as instructions for caring for pill bugs and returning them to nature.

Next Time You See a Seashell
By Emily Morgan
(FOSS Animals Two by Two, Plants and Animals, Structures of Life)

Beautiful photos encourage you to closely observe these seashells and wonder about the living creature it was once part of. Questions and information guide the reader to explore the shape, texture, and colors of seashells as well as how it is used for protection. Terms including, mollusk, gastropod, and bivalve, are introduced to understand the similarities and differences of these organisms. Meant to be read with an adult after experience with real shells, this book encourages an appreciation for the beauty of seashells and the biology of these amazing sea animals. Suggestions for further explorations are included along with a link to a video clip about mollusks.

Women in Science – Card Game
By Luana Games
Illustrated by Fran6co (Francis Collie). www.luanagames.com

This fantastic deck (appropriate for all ages, grades, and FOSS modules and courses) includes 54 wonderfully illustrated cards and can be played using the rules that come with the deck or as any standard 52-card game. However you and your students play, the brief and informative blurb on each scientist’s card will help all players become more familiarized with some of the many women in science. There’s also a new Women in Space expansion pack that we haven’t had a chance to review yet, but if it’s anything like the core deck, we’re looking forward to checking out the new cards! The game can be ordered via Luana Games (there is an educator’s discount when you order 10 decks at a time), played online at their website, or downloaded and printed for free.

Kristen Moorhead’s Top 10 Resources


5. 5 Practices for Orchestrating Task-Based Discussions in Science (2013), by Jennifer Cartier, Margaret Schwan Smith, Mary Kay Stein, and Danielle K. Ross


10. The Choreography of Presenting: The 7 Essential Abilities of Effective Presenters (2010), by Kendall V. Zoller and Claudette Landry
FOSS Professional Development: NSTA National 2017 National Conference, Los Angeles, CA  
March 29–April 2

Delta Education will host FOSS several Professional Development opportunities before the 2017 National NSTA Conference in Los Angeles, California (March 29, 2017). These Institutes will be for educators who plan to transition to FOSS Next Generation K–5 and Middle School. These Institutes are designed for lead teachers, administrators, curriculum developers, professional developers, and university methods instructors.

To secure your spot at an Institute, please contact:
Jenn Reid Strong at Delta Education  
800.338.5270 x3667  
jenn.reid@schoolspecialty.com

Sign Up to Receive the FOSS Newsletter

To receive the FOSS Newsletter electronically or in print, sign up at www.deltaeducation.com/FOSSnewsletter.

You can view the current and previous issues at http://www.FOSSweb.com/newsletter.

FOSSWEB HELP AND ACCESS CODES


Permanent Access Codes

AME2EL1650

FOSS Middle School 1st Edition Access Code  
AME1MS4600

FOSS CA Edition (K–5) Access Code  
AME1CA8460

FOSS Help

Account Questions/Help Logging In/Access Code Issues  
School Specialty Science Technical Support  
techsupport.science@schoolspecialty.com  
Phone: 800.258.1302, 8:00 am–5:00 pm ET

General FOSSweb Technical Questions  
FOSSweb Tech Support  
support@fossweb.com

FOSS Registration Walkthrough Videos

http://tinyurl.com/pp2bw3v

FOSS K–8 Commercial Workshop Schedule—NSTA Regional Conferences, Fall 2016

Thursdays—10/27 (Minneapolis), 11/10 (Portland), 12/1 (Columbus)

NSTA 2016 FALL AREA CONFERENCES

K–8 Workshop Schedule

Minneapolis, MN  
October 27–29, 2016

Portland, OR  
November 10–12, 2016

Columbus, OH  
December 1–3, 2016

Thursday (10/27, 11/10, 12/1)

8:00–9:00  Wave Properties and Information Transfer

9:30–10:30  Engage Students in FOSS Next Generation

11:00–12:00  The Reflective Assessment Practice: Improving Science Achievement in 10 minutes

12:30–1:30  Scientific Practices: What Does Argumentation Look Like in an Elementary Classroom

2:00–3:00  What Does Conceptual Modeling Look Like in an Elementary Classroom?

3:30–4:30  Evolutionary Evidence in the Fossil Record: Life Science with FOSS

CSTA CONFERENCE

Palm Springs, CA, October 21–23, 2016

Friday, October 21, 2016

2:30–5:30  Fostering a Science-Driven Language and Literacy Learning Environment (SCI)

Sunday, October 23, 2016

11:30–1:00  A Phenomenal Workshop

Be sure to check the FOSS Professional Development calendar and the CSTA Program Book for the dates and times of the following workshops:

FOSS has a Middle School Program!

FOSS Next Generation: Transitioning to NGSS Made Easy

Regional Institutes

Regional institutes for elementary and middle school programs are offered throughout the country. For a complete list of dates and locations, please visit the Professional Development calendar on FOSSweb, or contact Jenn Reid Strong for more information.  
jenn.reid@schoolspecialty.com

http://www.FOSSweb.com/pd-event-calendar

http://www.facebook.com/FOSSscience

http://twitter.com/FOSSscience
FOSS Next Generation Middle School Courses Now Available!

Explore the next generation of three-dimensional active science with our latest program for middle schools.

- 12 courses span the life, earth, and physical sciences
- Deep connections to the science and engineering practices, disciplinary core ideas, and crosscutting concepts
- Convenient conversion options available for FOSS Middle School First and Second Edition users

Read more about FOSS Next Generation Middle School on pages 3–5 of this issue and visit deltaeducation.com/FOSSNG to request a sample or a quote.