FOSS | FOSS PATHWAYS™ | *Developed at:* The Lawrence Hall of Science UNIVERSITY OF CALIFORNIA, BERKELEY®

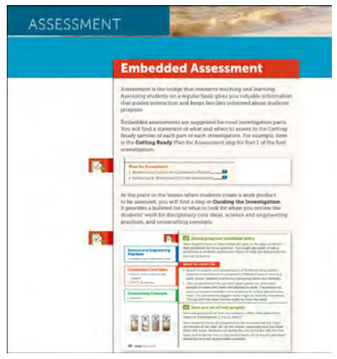
Measure progress. Support learning. Meet goals.

Assessment that encourages a growth mindset

FOSS is explicitly aligned with NGSS and state standards for science. The integrated FOSS Assessment System is at the core of this alignment. Based on research by FOSS developers during the NSF-supported Assessing Science Knowledge (ASK) project, the system supports a growth mindset to help students meet the goals described in the NGSS performance expectations.

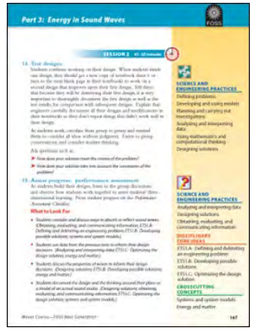
Embedded Assessment

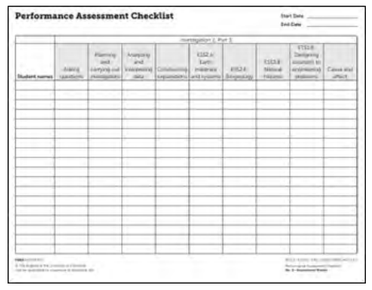
Continuous monitoring of student thinking helps teachers know when more instruction is needed. Formative assessments are based on authentic student work, including science notebook entries and response sheets.



Performance Assessment

Teachers track students' progress on science and engineering practices and crosscutting concepts by observing students' interactions as they investigate.

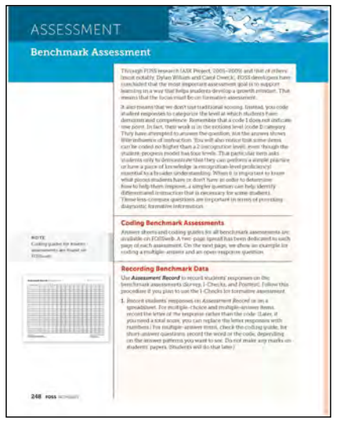


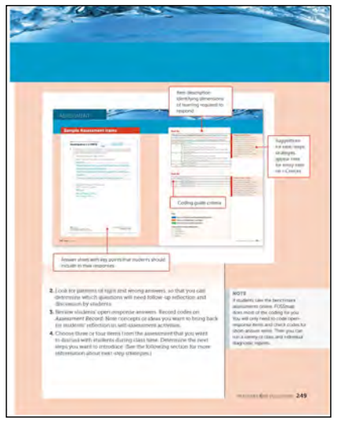


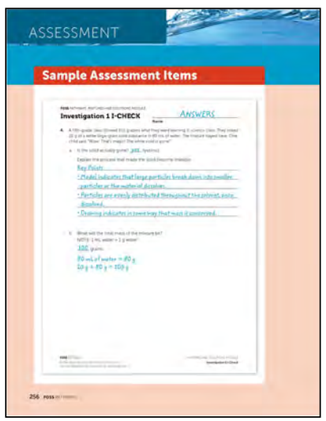
Benchmark Assessment

FOSS benchmark assessments for Grades 1-8 include:

- Assessments to gauge students' knowledge before and after the course for grades 3-8.
- I-Check assessments to monitor progress at the end of one to two investigations.
- Options to make modifications to assessments for students with IEPs and those who need accommodations.

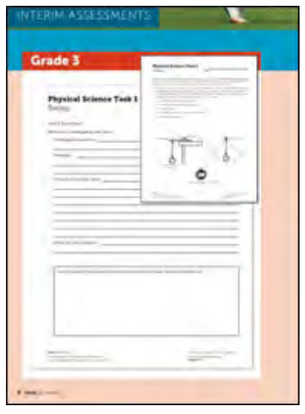


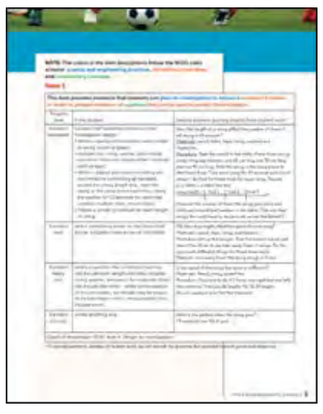


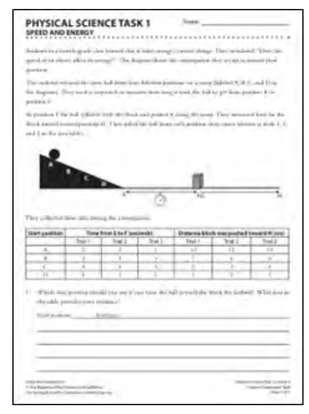


Interim Assessment

Interim assessment tasks for grades 3–5 are designed specifically around NGSS performance expectations to expose students to new ways of integrating and applying the three dimensions to solve problems. These can be used at the end of a module or at year end as a grade-level summative assessment.

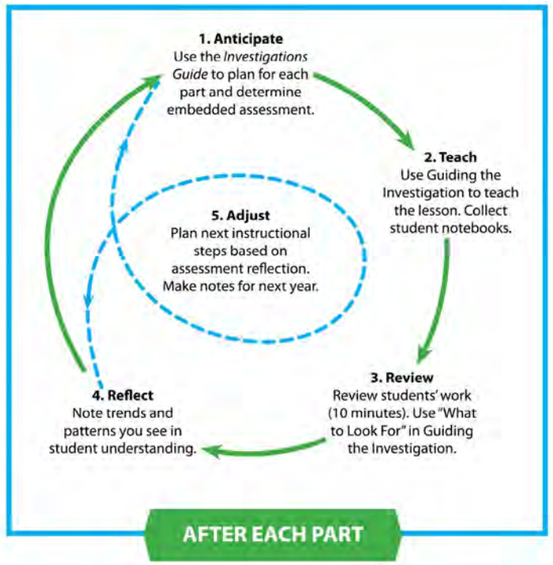






Provide diagnostic feedback to teachers and students

Results of studies in FOSS classrooms have demonstrated that teachers can discover meaningful learning trends by spending just 10 minutes reviewing student work after the day's lesson. The FOSS Assessment System includes a practice called reflective assessment that enables teachers to efficiently acquire useful learning data, informing next-step strategies for effective instruction.



"FOSS assessments allow more authentic learning experiences for my students."

Kathleen L.
Teacher, Kentucky

Self-assessment and next step strategies

The FOSS Assessment System gives students more chances to improve their understanding. Self-assessment gives students the opportunity to be responsible for their own learning, and helps build their scientific knowledge and practice. Self-assessment engages students in grades 3–8 with whole-class and small-group discussion, followed by critical analysis of their own work.

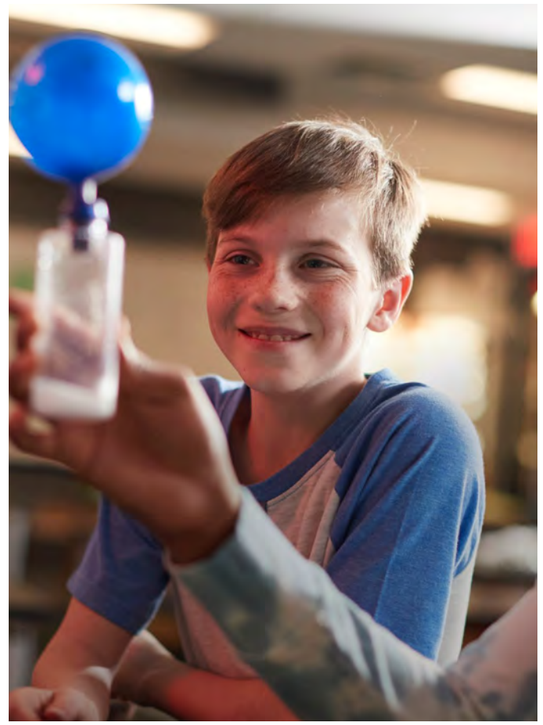
Here are some examples of techniques and strategies that FOSS provides to help students maximize their understanding of concepts, while allowing teachers to evaluate progress based on each student's understandings.

Strategies for the whole class

- Scaffolded multiple choice discussions
- Review of key points that should be included in the responses
- Students revise responses using color codes
- Group consensus/whiteboards
- Class debates
- Critical competitors

Strategies for individual students and small groups

- Feedback notes
- Response logs
- Conferences
- Centers
- Reteaching or clarifying a concept



FOSSmap, Grades 3–8

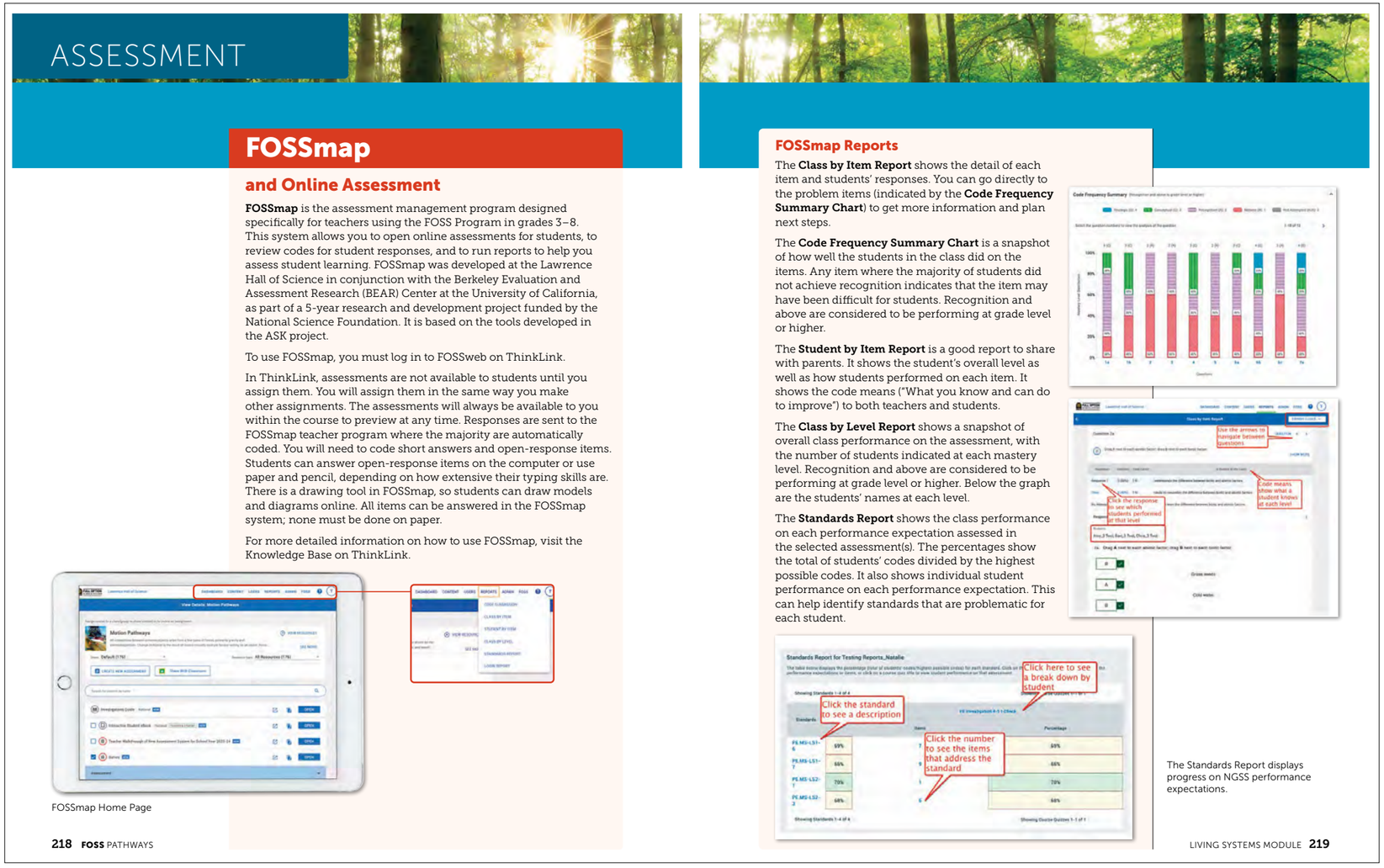
Online assessment promotes ease of use

FOSSmap takes assessments for grades 3–8 online and generates a number of diagnostic and summary reports for quick and easy use in the classroom. The FOSSmap platform provides streamlined student management, an updated interface, and new reporting capabilities. Its many available reports include:

The Max Code Frequency Chart tells you at a glance how well the class did on each item and which items may need extra attention.

The Class by Item Report shows the detail of each item and students' responses.

The Student by Item Report is well suited as a report to send home to parents thanks to its informative summary nature.



ASSESSMENT

FOSSmap

and Online Assessment

FOSSmap is the assessment management program designed specifically for teachers using the FOSS Program in grades 3–8. This system allows you to open online assessments for students, to review codes for student responses, and to run reports to help you assess student learning. FOSSmap was developed at the Lawrence Hall of Science in conjunction with the Berkeley Evaluation and Assessment Research (BEAR) Center at the University of California, as part of a 5-year research and development project funded by the National Science Foundation. It is based on the tools developed in the ASK project.

To use FOSSmap, you must log in to FOSSweb on ThinkLink.

In ThinkLink, assessments are not available to students until you assign them. You will assign them in the same way you make other assignments. The assessments will always be available to you within the course to preview at any time. Responses are sent to the FOSSmap teacher program where the majority are automatically coded. You will need to code short answers and open-response items. Students can answer open-response items on the computer or use paper and pencil, depending on how extensive their typing skills are. There is a drawing tool in FOSSmap, so students can draw models and diagrams online. All items can be answered in the FOSSmap system; none must be done on paper.

For more detailed information on how to use FOSSmap, visit the Knowledge Base on ThinkLink.

FOSSmap Home Page

FOSSmap Reports

The **Class by Item Report** shows the detail of each item and students' responses. You can go directly to the problem items (indicated by the **Code Frequency Summary Chart**) to get more information and plan next steps.

The **Code Frequency Summary Chart** is a snapshot of how well the students in the class did on the items. Any item where the majority of students did not achieve recognition indicates that the item may have been difficult for students. Recognition and above are considered to be performing at grade level or higher.

The **Student by Item Report** is a good report to share with parents. It shows the student's overall level as well as how students performed on each item. It shows the code means ("What you know and can do to improve") to both teachers and students.

The **Class by Level Report** shows a snapshot of overall class performance on the assessment, with the number of students indicated at each mastery level. Recognition and above are considered to be performing at grade level or higher. Below the graph are the students' names at each level.

The **Standards Report** shows the class performance on each performance expectation assessed in the selected assessment(s). The percentages show the total of students' codes divided by the highest possible codes. It also shows individual student performance on each performance expectation. This can help identify standards that are problematic for each student.

The Standards Report displays progress on NGSS performance expectations.

The Class by Level Report groups students into the four progress levels: notions, recognition, conceptual, and strategic.

The Standards Report displays class progress on NGSS performance expectations to help ensure all standards are being met.

Administrator access to student data allows teachers and administrators to talk insightfully about learning, assessment, and data-driven results to help optimize conversations about student and class progress.

The Investigations Guide provides a description of FOSSmap Online Assessment. This example is from Pathways Living Systems, pages 218 and 219.

FOSS: Proven to engage students and meet standards.

The FOSS program has been refined through three decades of field testing with 150,000 teachers and 4 million students. It has empowered teachers, excited students, and elevated test scores in urban, suburban, and rural settings for students of diverse backgrounds and experiences.

The collaborative multimodal approach of FOSS invites students to actively investigate phenomena using three-dimensional learning practices. Because students are fully engaged through hands-on investigations of local and relevant phenomena before reading about them, they explore and understand scientific concepts in a way that resonates with them individually, promoting access and equity.

FOSS gives educators the flexibility to customize science instruction and adjust it to their individual teaching needs. Aligned with today's national science standards, FOSS is readily adaptable to meet state and local requirements in the time allotted to teach science.

Learn more.

Contact a FOSS Representative at **FOSS-Science.com**

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