New Jersey OpenSciEd

High School Field Test

OpenSciEd High School

Long awaited, high-quality instructional materials designed for, and aligned to New Jersey Student Learning Standards - Science

Project Goals

- Implement quality three-dimensional instruction aligned to the New Jersey Student Learning Standards - Science
- Improve science learning for all high school students
- Build teacher leadership and content/pedagogy expertise for implementing the New Jersey Student Learning Standards - Science
- Leverage teacher leadership in the development process

Project Description

This project is developing full year courses in Biology, Chemistry, and Physics with the Earth and Space Science standards integrated fully.

Teacher participants will field test instructional materials and participate in professional learning targeting effective use of the materials to support equitable science learning during the academic years of 2021-2022 and 2022-2023.

Liberty Science Center is a leader in the implementation of the New Jersey Student Learning Standards - Science and is the official New Jersey partner for OpenSciEd, providing the professional learning support for the field test in New Jersey.

Space is limited!

Application deadline: April 7, 2021

Overview

OpenSciEd is recruiting Biology, Chemistry, and Physics teachers in New Jersey to field test new high school instructional materials. OpenSciEd is a nonprofit organization that brings together educators, state science specialists, curriculum developers, and professional development experts to improve science education through the development and implementation of high-quality, freely available, science instructional materials. A significant part of the instructional materials development process is field testing and revising units prior to their public release.

The high school Biology, Chemistry, and Physics courses are:

- Based on research regarding how students learn, what motivates learning, and the implications for teaching,
- Developed with educators and extensively piloted by teachers and schools,
- Designed to be used with low-cost, standard laboratory equipment and materials amenable to large-scale deployment, and
- Designed for both classroom and remote learning environments.

During the 2021-22 and 2022-23 school years, we are seeking the following New Jersey high school science teachers to fully participate in the OpenSciEd high school field test:

- 4 Biology teachers
- 4 Chemistry teachers
- 4 Physics teachers

OpenSciEd Proposed Scope and Sequence

The proposed scope-and-sequence for OpenSciEd HS articulates an order for courses, as well as an order for units within courses. The order of courses reflects (a) a purposeful consideration of how to build disciplinary core ideas (DCIs), science and engineering practices (SEPs), and crosscutting concepts (CCCs) over time; and (b) market considerations (i.e., the most common ordering of courses across states). Students would begin by taking biology, then chemistry, and then physics. Earth science is integrated throughout.

Each course will engage students with multiple opportunities to engage with DCIs, SEPs, and CCCs targeted in the performance expectations, with scaffolding faded over the course of the year in each dimension. All of the performance expectations in high school science, including the engineering standards, are included.

The bundling of performance expectations was based on extensive consultation with science teachers and the science coordinator in OpenSciEd's pilot district, Denver Public Schools. For each bundle, anchoring phenomena have been identified for biology and chemistry using a process that included gathering interest data from students and disaggregating them by race, gender, and home language. Versions of units in biology and chemistry have also been field tested. Phenomena are still being developed for physics.

OpenSciEd High School Field Test Schedule

The field testing of the instructional materials will take place over the next two years. Table 1 describes how many units from each course will be field tested each year.

Table 1: Field Test Schedule

	2021-2022 Academic Year	2022-2023 Academic Year
Biology 5 units	• Unit 1: Ecosystems: Interactions, Energy, Dynamics • Unit 3: Inheritance & Variation of Traits • Unit 4: Natural Selection and Evolution of Populations	• Unit 1: Ecosystems: Interactions, Energy, Dynamics • Unit 2: Matter & Energy in Organisms • Unit 3: Inheritance & Variation of Traits • Unit 4: Natural Selection and Evolution of Populations • Unit 5: Common Ancestry & Speciation
Chemistry 5 units	• Unit 2: Structure & Properties of Matter • Unit 5: Chemical Reactions and Energy Choices	• Unit 1: Atomic Interactions • Unit 2: Structure & Properties of Matter • Unit 3 Chemical Reactions & Carbon Cycling • Unit 4: Properties of Water and Climate Impacts • Unit 5: Chemical Reactions and Energy Choices
Physics 6 units	• Unit 1: Energy Flow from Earth's Systems • Unit 5 - Electromagnetic Radiation	• Unit 1: Energy Flow from Earth's Systems • Unit 2: Energy, Forces & Earth's Crust • Unit 3: Collisions & Momentum • Unit 4: Meteors, Orbits, & Gravity • Unit 5 - Electromagnetic Radiation • Unit 6: Earth's History and the Big Bang

How to Apply

If you are interested in supporting the OpenSciEd initiative by field testing the high school instructional materials and providing feedback on the materials and professional learning, please complete the online teacher application and Statement of Assurance no later than April 7, 2021.

If you have questions, contact:
Michael Heinz
New Jersey Department of Education
Michael.Heinz@doe.nj.gov

Benefits

Participation and input on a research-based national project intended to transform high school science teaching and learning

School System Benefits

- Professional learning for your field test teachers, conducted by nationally-trained, leaders in science education (9-10 days).
- Early access to upcoming high school OpenSciEd materials that complement the high quality middle school materials that are now available from OpenSciEd.

Field Test Teacher Benefits

- Professional learning, conducted by nationally-trained, leaders in science education and NGSS (9-10 days)
- Network with science teachers in New Jersey and nationally
- Invitation to participate in a co-design process of the field test units
- Field test units
- National recognition in the final teacher materials

Field Test Teacher Commitments

Each teacher selected as a field test teacher must agree to all of the following:

- Attend all days of professional learning for the field test units (9-10 days per course).
- Participate in ongoing field test teacher support offered by the Liberty Science Center.
- Field test all OpenSciEd units in your course with fidelity.
- Participate in any state collaboration requirements.
- Provide feedback to OpenSciEd during and after field testing each unit using an open-ended teacher feedback form.
- Participate in OpenSciEd research using a variety of data collection instruments (e.g., interviews/learning logs, collecting student work/exit tickets, pre/post surveys, pre/post assessments).
- Interested field test teachers may be invited to contribute additional data such as student work samples.

"To me, this is the true way science should be taught. This is the way we would like to see all of our classrooms become."

- Principal

"The materials are a huge equalizer in the classroom, especially for students with special needs and English learners. Students are figuring things out and actually doing science rather than just being "told" about science."

- Teacher

Commitments and Support of the Field Test

Each LEA selected as a field test location must agree to all of the following:

- Provide substitute pay for all professional learning (PL) during school calendar time and/or pay necessary stipends for PL outside of contract hours/days.
- Pay all travel costs for field test teachers to attend any face-to-face PL for each unit (if scheduled).
- Support the teachers in field testing the pilot units with fidelity.
- Work with the project researchers to provide access and permissions for observations and classroom data collection associated with field tests. This will involve helping the researchers navigate any system-specific Institutional Review Board (IRB) processes.
- Purchase any materials/supplies not already available in the school. (The maximum budget per unit is $500. This provides enough materials for 6 classes with 30 students each.)
- Provide devices for digital access to student handouts or cover the costs of printing any necessary student handouts.
- Ensure students can complete surveys/assessments online (minimum of 1 device per 3 students needed).

Anticipated LEA Expenses

Information is tentative as developers are finalizing schedules. All PL may be face-to-face unless otherwise noted.

Biology (per teacher)

- 8 days PL in 2021-2022
  - 4 summer, virtual
  - 4 school year
- 4 days PL (2022-2023)
  - 2 summer
  - 2 school year
- Up to $2,500 kit costs*

Chemistry (per teacher)

- 6 days PL (2021-2022)
  - 4 summer, virtual
  - 2 school year
- 6 days PL (2022-2023)
  - 6 summer and school year (specifics to be determined)
- Up tp $2000 in kit costs*

Physics (per teacher)

- 6 days PL (2021-2022)
  - 4 summer, virtual
  - 2 school year
- 8 days PL (2022-2023)
  - 8 summer and school year (specifics to be determined)
- Up tp $3,000 in kit costs*

Other

- Devices for digital access or printing costs for student handouts (printed books available for $4.00/student).
- 1 device/3 students

*This is a maximum cost. The actual cost is likely to be less because it includes materials that are typically found in a high school science class.