



Science Professional Learning Opportunities

Brought to you by the Science Team in the Department of STEM

Office of Curriculum, Instruction, and Professional Learning

Division of Teaching and Learning

NYC Department of Education

Listing by Grade – Registration Links available by clicking on event/session topic

[PL sessions for Elementary teachers](#)

[PL sessions for Middle School teachers](#)

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[PL sessions for Administrators](#)

ELEMENTARY SCIENCE INSTITUTE – Level 1

| Event | Dates | Time |
|---|-------|--|
| <p>Description</p> <p>The Elementary Science Institute is designed for elementary (K-5) teachers, including science cluster teachers. The Institute will consist of a series of four sessions, and it is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p><u>Session 1: Moving Science Standards into Practice: Transforming the Enhanced Scope and Sequence into Inquiry-Based Activities</u></p> <p>In this session, participants explore innovative strategies to improve science instruction and student achievement in order to meet or exceed grade-level standards. Participants will be introduced to the Enhanced Science Scope and Sequence to build a shared understanding of its components. They will develop a lesson using the understanding of the 5E Instructional Model. The 5Es represents five stages of a sequence for teaching and learning: Engage, Explore, Explain, Extend and Evaluate. Participants will receive resources and tools to use as they implement the strategies.</p> <p>Session 2: Deepening Thinking and Reasoning Through Elementary Common Core Learning Standards (CCLS) in Literacy</p> <p>Participants explore connections between the Enhanced Science Scope and Sequence and CCLS in Literacy. Participants will experience the claim, evidence and reasoning framework to increase student involvement by relating their data to knowledge gained from a science investigation. The materials introduced during the sessions are designed to help teachers infuse strong content, scientific inquiry, writing for science and other cross-curricular connections within the elementary classroom. Participants will receive resources and tools to use as they implement the strategies.</p> <p>Session 3: Linking Elementary Science and Mathematics</p> <p>Educators explore connections between the Enhanced Science Scope and Sequence and age appropriate mathematics to encourage interdisciplinary instruction. This session will provide educators the opportunity to engage in activities that open the door to hands-on, discovery-based, and academically rigorous activities that link various scientific and mathematics disciplines. Teachers will have the opportunity to plan lessons that allow students to appreciate and experience both disciplines and explore the natural connections between them.</p> <p>Session 4: Formative Assessment—Assessment for Learning</p> <p>During this session, participants will explore how to use formative assessments in science as a powerful tool to empower students to take charge of their learning and to raise student achievement. Participants will engage in hands on activities and conversations that will bring new understanding about a science framework that can be used to address students' ideas within a cycle of instruction, engage in scientific practices of constructing explanations and arguments from evidence, and experience the power of science notebooks as a strategy to support student learning. Participants will receive copies of the activities, strategies and ideas presented.</p> | | |
| <p>Manhattan Institute Thu 10/20 Fri 12/2 Thu 2/2 Thu 3/23</p> | | <p>9:00 am to 3:00 pm</p> |

ELEMENTARY SCIENCE INSTITUTE – Level 2

| Event | Dates by Location | Time |
|---|--|--|
| <p>Description</p> <p>The Elementary Science Institute is designed for elementary (K-5) teachers, including science cluster teachers who attended the Level 1 sessions in SY 2015-16 and have expressed an interest in continuing that learning. The Institute will consist of a series of four sessions, and it is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p>Session 1: The Power of Questioning in Elementary Science Classrooms</p> <p>Participants will explore how to utilize engaging questioning strategies to foster inquiry, depth of knowledge, and communication of science concepts that also teach ELA standards! This will help both teachers and students learn how to question effectively, making investigations more engaging.</p> <p>Session 2: Engage Elementary Students in Constructing Explanations in Science</p> <p>Participants will be guided through an effective framework that breaks down the complex practices of scientific explanation into four components – claim, evidence, reasoning, and rebuttal. The model provides teachers with a concrete roadmap for enhancing students’ conceptual understanding and fostering their ability to think and communicate more scientifically.</p> <p>Session 3: Engaging Students in Science and Mathematical Practices</p> <p>This session will provide educators the opportunity to engage in hands-on science tasks that integrates science and mathematical practices consistent with both the Enhance Science Scope and Sequence and the Common Core Learning Standards in Mathematics. Learn how to plan and implement high-quality instruction by combining three practices that have been shown to increase students’ critical-thinking skills: inquiry-based instruction, formative assessment, and teacher reflection.</p> <p>Session 4: Designing Science Instruction for Diverse Learners</p> <p>Educators will experience research-based instructional strategies to help increase the quality of science instruction and student learning. Participants will identify important content, explore ways to develop student understanding and create a learning environment that is aligned to the NYSED Core Curriculum and NYCDOE K-5 Scope and Sequence. Participants will engage in science inquiry to model techniques that help develop student conceptual understanding. Emphasis will be on the integration of instructional strategies that meet the needs of diverse learners.</p> | <p>Manhattan Institute Tue 11/1 Tue 1/10 Fri 3/17 Thu 5/11</p> <p>Queens Institute Fri 11/4 Fri 1/13 Tue 3/21 Tue 5/16</p> | <p>9:00 am to 3:00 pm</p> |

MIDDLE SCHOOL SCIENCE INSTITUTE – Level 1

| Event | Dates | Time |
|--|-------|--|
| <p>Description</p> <p>The Middle School Science Institute is designed for middle school teachers of Grades 6-8. The Institute will consist of a series of four sessions and four online sessions, and it is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p><u>*Orientation Session</u></p> <p>Participants will learn about goals, outcomes and content of the institute, set up their We Teach NYC account and start posting on the discussion board. There will be an introduction to the book that will guide our work in the institute: “Teaching for Conceptual Understanding in Science”. Participants will focus on “Conceptual Change in Science” as one of the instructional models described in the book.</p> <p>Session 1: Developing Literacy Skills through the Study of Photosynthesis</p> <p>Deepen your content knowledge of photosynthesis through the use of practical tools that develop reading, writing and oral discourse in the science classroom.</p> <p>Session 2: Making Math and Science Connections through the Study of Data and Ecosystems</p> <p>This session will address the connection between various physical and earth science topics and its connections to CCLS mathematical content and practices. We will discuss strategies for interpretation of data tables, graphs and charts, as well as summarizing and describing data sets that will strongly support the outcomes of investigation projects.</p> <p>Session 3: Visual Representations and the Study of Earth Science</p> <p>Plate tectonics and change over a long period of time are abstract conceptual ideas middle school students often struggle to understand. Visual representations help middle school students in understanding concrete concepts and ideas in science. This session will explore different ways to integrate the use of multiple representations as well as tools that students can use to construct their own visual representations in science.</p> <p>Session 4: Energy, Heat Transfer and Formative Assessment</p> <p>During this session, we will discuss the use of effective tools to assess students' conceptual understanding while exploring hard to teach concepts such as energy.</p> | | |
| <p>Manhattan Institute</p> <p>* Mon 10/17 Tue 11/15 Tue 12/13 Tue 2/9 Tue 4/4</p> | | <p>9:00 am to 3:00 pm</p> |

MIDDLE SCHOOL SCIENCE INSTITUTE – Level 2

| Event | Dates by Location | Time |
|--|---|--|
| <p>Description</p> <p>The Middle School Science Institute is designed for middle school teachers of Grades 6-8 who attended the Level 1 sessions in SY 2015-16 and have expressed an interest in continuing that learning. The Institute will consist of a series of four sessions and three one-hour online sessions, and it is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p>*Orientation Session</p> <p>Participants will learn about goals, outcomes and content of the institute, which deepens our learning from last year. Participants will discuss steps needed to implement action research and their evolving roles as they transition from teachers to teacher-researchers. There will be a virtual conference with NSTA to set up our online professional learning community. Resources from the NSTA Learning Center will be used to support action research in the classrooms.</p> | | |
| <p>Session 1: Exploring Developmental Factors and Cognitive Readiness of Adolescents</p> <p>Adolescence is a complex stage that brings more than physical changes to students. We will discuss the readiness of adolescents to learn science at this age and explore research-based strategies that meet the needs of students according to their grade level and science content knowledge.</p> | | |
| <p>Session 2: Challenges and Instructional Strategies to Meet the Needs of Diverse Learners</p> <p>This session will explore how factors such as poverty, learning disabilities and language acquisition impact science learning in adolescents. We will discuss research-based strategies, learning styles, and the science content necessary for middle school students to learn science and develop science and engineering practices.</p> | | |
| <p>Session 3: Instructional Models and Induction of Students into Science Learning</p> <p>This session will study various instructional models for teaching challenging science topics to middle school students, such as change over time in rocks and landscapes, energy, and patterns in the motion of planets.</p> | | |
| <p>Session 4: Conceptual Understanding – Teaching for Transfer</p> <p>Application of content by students requires students to take ownership in their own construction of knowledge and participate in well planned investigations in which students develop scientific practices. This session will analyze how students build knowledge and are able to use this knowledge to investigate new problems in which they need to develop explanation and solutions.</p> | | |
| | <p>Manhattan North Institute</p> <p>*Tue 10/18 Thu 11/17 Tue 12/6 Tue 1/17 Wed 3/8</p> <p>Manhattan South Institute</p> <p>*Wed 11/2 Mon 11/21 Fri 12/9 Mon 1/9 Thu 3/9</p> | <p>9:00 am to 3:00 pm</p> |

HIGH SCHOOL SCIENCE INSTITUTE – Level 1

| Event | Dates by Location | Time |
|---|--|--|
| <p>Description</p> <p>The High School Science Institute is designed for high school Living Environment science teachers. The Institute will consist of a series of four sessions, and it is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p>Session 1: Understanding of Science Content</p> <p>Reading and writing are important skills for college and career readiness. Without strong literacy skills, students will not be successful in upper-level science classes. We will investigate ways to integrate reading strategies into the science class in order to increase understanding of science content.</p> <p>Session 2: Data Analysis in Science</p> <p>Students are often able to chart and graph data generated by a scientific study, but have difficulty analyzing the data. We will discuss strategies to help students interpret the data gathered as the result of a scientific investigation.</p> <p>Session 3: Visual Representations in Science</p> <p>Students will often skip charts, graphs, and diagrams in a textbook, thinking that the words are more important. This session will explore ways to help students to interpret visual representations to better understand science content.</p> <p>Session 4: Formative and Summative Assessment in High School Science</p> <p>During this session, we will discuss the use of effective tools to assess student understanding of scientific knowledge and practices. In addition, we will look at the ISA (Item Skills Analysis) tool for the Living Environment Regents exam.</p> | <p>Manhattan North Institute</p> <p>Tue 10/25 Thu 12/15 Wed 2/8 Tue 3/7</p> <p>Manhattan South Institute</p> <p>Fri 10/28 Fri 11/16 Mon 2/6 Fri 3/10</p> | <p>9:00 am to 3:00 pm</p> |

[Register for the Manhattan North Institute](#)

[Register for the Manhattan South Institute](#)

HIGH SCHOOL SCIENCE INSTITUTE – Level 2

| Event | Dates | Time |
|---|--|--|
| <p>Description</p> <p>The High School Science Institute is designed for high school Living Environment science teachers who attended the Level 1 sessions in SY 2015-16 and have expressed an interest in continuing that learning. The Institute will consist of four in-person sessions, as well as asynchronous online participation. It is expected that teachers will attend the entire series. The descriptions of the sessions are below:</p> | | |
| <p>Session 1: Exploring Continuous Improvement and Identifying Problems of Practice</p> <p>Participants will be introduced to the principles of improvement science and teacher action research. This session will engage teachers in identifying a problem of practice and conducting an analysis of that problem. Before the next session, participants will collect data and refine their problem of practice.</p> <p>Session 2: Using Collegial Inquiry to Plan for Improvement</p> <p>Participants will investigate evidence-based changes that could be implemented to address their problem of practice. They will construct a plan for implementing the change, a hypothesis about the expected impact of making this change, and a method for measuring the impact of the change. Before the next session, participants will implement a change, collect data, and document their process.</p> <p>Session 3: Reflection, Analysis, and Applying New Insights</p> <p>Participants will reflect and assess in order to glean insights for the next cycle of improvement. They will draft a plan for further inquiry and design a format for sharing their work with the community. Before the next session, participants will engage in another inquiry cycle and prepare to present their work.</p> <p>Session 4: Sharing Work and Planning Next Steps</p> <p>During this session, participants will have the opportunity to share their inquiry and results with the community. In addition, they will reflect on the collegial inquiry experience and identify ways in which they can move forward with this form of professional learning.</p> | <p>Manhattan Institute</p> <p>Mon 10/24 Mon 11/14 Thu 1/12 Fri 2/10</p> | <p>9:00 am to 3:00 pm</p> |

SCIENCE LEADERSHIP: SCHOOL ADMINISTRATORS

| Event | Dates | Time |
|--|---|---|
| <p><u>Science Leadership: Fostering Effective Teaching Practices in PreK-8 Classrooms in Support of the New NYS P12 Science Learning Standards</u></p> | | |
| <p>This three-session series is designed for K-8 principals and assistant principals. It will investigate leadership practices that will help K-8 administrators support effective instruction in PreK-8 science. We will examine the new NYS P12 Science Learning Standards which have been presented to the NYS Board of Regents and their implications for science teaching and learning in the PreK-8 classroom. We will develop a strong understanding of the three-dimensional learning that supports these standards through engaging in a variety of activities and examine how these dimensions support diverse learners in science. We will also address issues around implementation including assessment, curriculum, and program support.</p> | <p>Thu 12/8 Thu 1/5 Wed 2/1</p> | <p>8:30 am to 11:30 am</p> |