



DEVELOPMENT OF ASSESSMENTS MEASURING THE NYS P-12 SCIENCE LEARNING STANDARDS

Presentation to the Board of Regents Standards and Assessment Workgroup

March 2019

New York State P-12 Science Standards Development, Adoption, and Implementation

Phase I
Raise Awareness & Build Capacity

Phase II
Transition & Implementation

Phase III
Implementation & Sustainability

Ongoing curriculum & professional development

Instruction aligned to NYS P12
Science Learning Standards begins...

September 2019
for Grades P-3 and 6

September 2020
for Grades 4 and 7

September 2021
for Grades 5 and 8

September 2022
Continue Phase III transition toward full
implementation of the NYS 9-12 Science
Learning Standards at the local level

2016

2017

2018

2019-20

2021

2022-24

Standards Become
Effective July 1, 2017

March 2018
NYS P-12 Science
Roadmap
Released

December 2016 adoption
of NYS P-12 Science
Learning Standards.

June 2020

Last administration:
• Grade 4 science
test aligned to the
1996 Standards

June 2021

- No Grade 4 science test; these students will take new science test in grade 5 in 2022
- Last administration of Grade 8 science test aligned to the 1996 Standards

June 2022

- First administration:
- Elementary Grade 5
 - Intermediate Grade 8 science tests

June 2023

- First administration Regents Exams:
- Biology
 - Earth and Space Science

June 2024

- First administration Regents Exams:
- Chemistry
 - Physics

State Level Science Assessment Development & Implementation

NYS P-12 Science Learning Standards

- In December 2016, the Board approved the NYS P-12 Science Learning Standards.
 - *Implementation of these standards began July 1, 2017.*
- Beginning with the 2017-18 school year and continuing throughout the 2018-19 school year, districts are engaging in Phase 1 of the five-year *Statewide Strategic Plan for Science: “Raise Awareness & Build Capacity.”*
- The Strategic Plan was developed in collaboration with the Science Content Advisory Panel, the Statewide Leadership Team, and representatives of the NYS Science Education Consortium to guide a comprehensive approach toward improving P-12 science education statewide. It was approved by the Board in January 2015.

Course Maps & Instructional Support

- The standards at the high school level are not divided into courses.
 - *They are listed by grade for P-5 and are grade banded for Middle School and High School.*
- NYS educators and other science stakeholders (e.g., steering committee) were engaged to divide the HS standards into course maps for four HS courses.
 - *Course maps are posted on SED website.*
- The Office of Curriculum & Instruction has a website devoted to [Science Standards Implementation Resources](#) to support the “Raise Awareness & Build Capacity” phase of the Strategic Plan.

Strategic Plan Assessment Goal

- **Objective 1:** Explore established and contemporary science assessment models at the international, national, state, regional, and local levels to implement changes in the P12 science assessment system that are reflective of the new NYS P-12 science learning standards.
- Convene science education stakeholders to review and evaluate New York State's current assessment system for the sciences P-12.
 - *Science Education Steering Committee came in March 2017, January 2018 and September 2018 providing recommendations for a new assessment system; they also facilitated the development of the Course Maps for four courses culminating with a Regents Exam.*
- Collaborate between states to discuss and/or develop science assessments that have common blueprints.
 - *Monthly meetings with Achieve 50 States Team, reviews of CCSSO documents, Learning Policy Institute performance assessment conversations, Stanford's SNAP courses, and our own internal research of other states' work posted on their webpages have guided this.*

Strategic Plan Assessment Goal

- Propose a P-12 science assessment system that reflects the core science content, conceptual understandings, and practices that are included in the new P-12 NYS science learning standards.
 - *Knowledge has been gained through conversations with the Achieve 50 States Team and collaborations with STANYS/Master Teachers/BOCES SCDN Science Framework group for professional development about content, concepts, and practices.*
- Develop and recommend an implementation timeline that is based on the Board of Regents' decision regarding the new P-12 NYS science learning standards and assessment system.
 - *Science Education Steering Committee did this in January 2018; the Science Education Consortium also participated in a similar exercise and came up with a similar timeline.*

Grades 5 and 8 Science Tests

- Work began in early 2018 with the Steering Committee making recommendations about assessment priorities.
- NYS science educators reviewed the learning standards and made recommendations about how best to measure the Performance Expectations given their 3-dimensional nature.
 - *Science and Engineering Practices*
 - *Disciplinary Core Ideas*
 - *Cross-cutting Concepts*

Grades 5 and 8 Science Tests

- NYS science educators are driving an Evidence-Centered Design (ECD) approach to developing the Grade 5 Elementary-level and Grade 8 Intermediate-level Science Tests.
 - *ECD is a research-based, systematic test development process used in many large-scale testing programs that ensures tests are focused on the most valuable aspects of learning (i.e., skills).*
- They began with the development of **claims** that explicate what students will be able to do at the end of the course, when they are assessed.
- Educators are now working on **evidence** that identify what a student needs to do/say/produce to support acquisition of the claim.

Grades 5 and 8 Performance Tests

- The current Elementary- and Intermediate-level Science Tests each include a performance test that students complete during class time, prior to the written test.
- Based on the content of the new learning standards and feedback from science educators, performance tests will be included with the new tests.
- NYS science educators have been examining the knowledge and skills measured by the current performance tests and make recommendations about changes in the activities necessitated by the new learning standards.
 - *Changes to activity stations may be phased in over time to allow schools ample time for schools to order new equipment that may be needed.*

Computer-based Testing

- If funding is available, the new Grades 5 and 8 Science written tests will be delivered via computer as the predominant mode of administration.
- Computer delivery would use the same system as the Grades 3-8 English Language Arts and Mathematics Tests to maximize student and teacher familiarity.
- Computer delivery creates opportunities for more innovative scientific exploration, such as computer simulations, further down the road.

Future Development of Regents Exams in Science

- Educators developed course maps for four HS courses
 - *Earth & Space Science*
 - *Life Sciences: Biology*
 - *Physical Sciences: Chemistry*
 - *Physical Sciences: Physics*
- Currently engaging in rich discussions with Content Advisory Panel, science educators and stakeholders about how to best measure the new standards.
 - *May include development of a number of required laboratory activities (similar to current Living Environment Exam)*

Assessment Schedule

- Phase III of the Strategic Plan: Implementation and Sustainability

- May/June 2022
 - *First administration of new Elementary Grade 5 and Intermediate Grade 8 Science Tests*

- June 2023
 - *First administrations of new Regents Examinations in Earth & Space Science and Life Sciences: Biology*

- June 2024
 - *First administrations of new Regents Examinations in Physical Sciences: Chemistry and Physical Sciences: Physics*

Considerations

- Assessment Office capacity is limited by insufficient number of science specialists.
- Funding must be available to realize computer delivery of Elementary and Intermediate Science Tests and provide opportunities for future innovation.