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DEPARTMENT OF EDUCATION

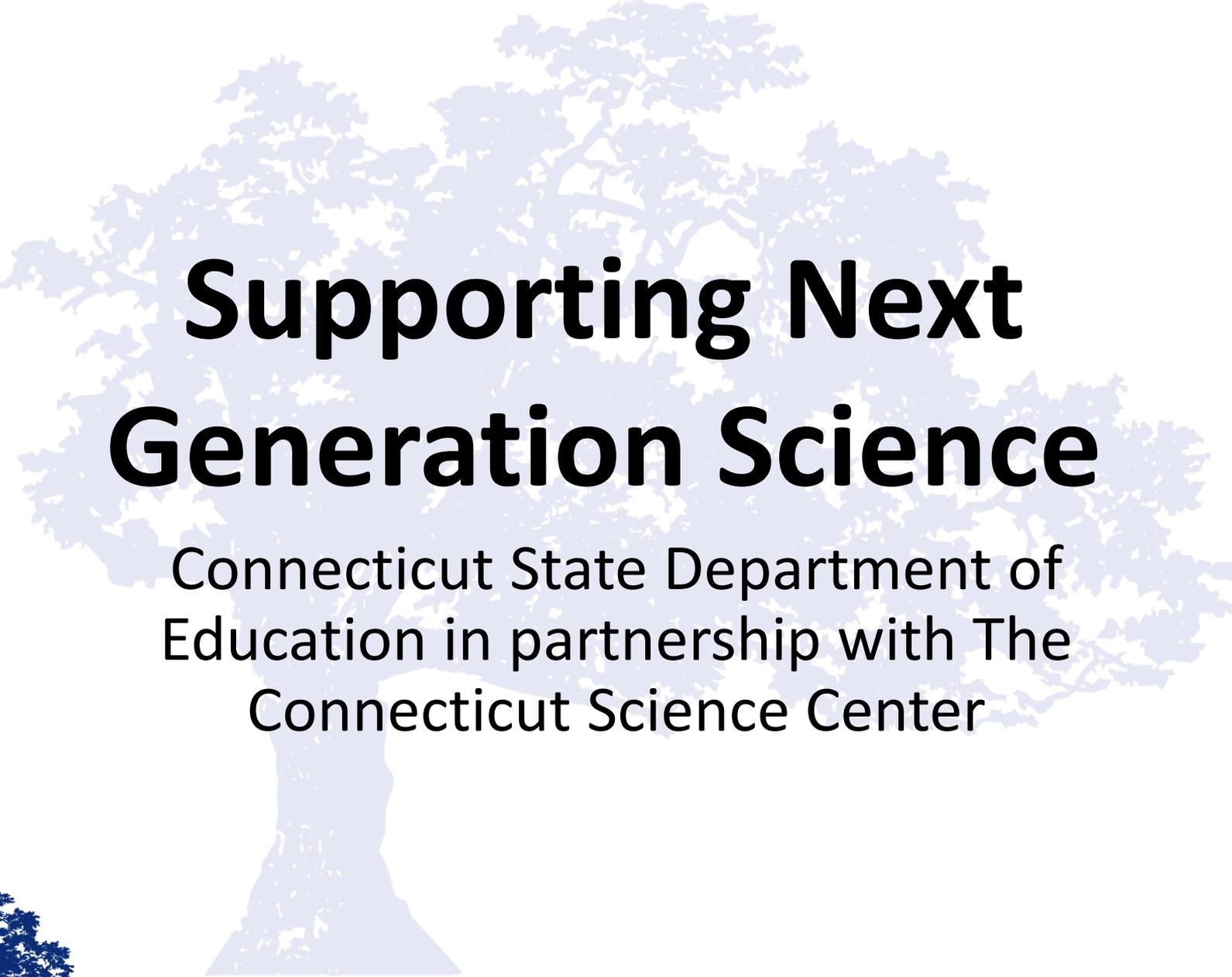
CONNECTICUT STATE DEPARTMENT OF EDUCATION

# NGSS Implementation Initiatives & NGSS Summative Assessment Development



Presenter: Ron Michaels  
CT State Department of Education

Fall 2018



# Supporting Next Generation Science

Connecticut State Department of  
Education in partnership with The  
Connecticut Science Center



# For the latest updates:

<http://www.sde.ct.gov>

ct.gov Connecticut's Official State Website Search Connecticut Government...



 Connecticut State Department of Education

**NOTICE:** The Connecticut State Department of Education's customer service window for educator certification will be closed, effective March 12, 2018. The last day of staffing will be Friday, March 9, 2018. Please Note: The Bureau of Certification will remain open and fully functioning. This change only impacts the street level customer service window. [For more information about submitting applications and supporting documentation please review our Cert Alert.](#)

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## K-12 Education

Most Popular Results

List View ▼

### [Apply to RSCO Open Choice or Magnet School](#)

The Regional School Choice Office (RSCO) lottery application includes the Hartford Region Open Choice Program and approximately 45 interdistrict magnet schools. Parents and guardians with children who reside in Connecticut at the time of application are eligible to apply.

### [Bullying and Harassment](#)

Bullying cannot be a rite of passage in our nation's schools. Instead, our schools must be safe and nurturing environments that promote learning and full participation by all students.

### [Connecticut SAT School Day](#)

2018 Connecticut SAT School Day Resources.

### [Mastery-Based Learning Resource Center](#)

This website is designed to support local school districts that choose to implement Mastery-Based Learning.





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Mastery-Based Learning >

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Physical Education >

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## Science

4 of 4 Results

List View ▼

### [Connecticut High School Science Safety](#)

Direction, support, and resources for high school science teachers and school administrators to plan exciting and safer laboratory experiences for students based on prudent professional practices and legal safety standards.

### [Connecticut Middle School Science Safety](#)

Direction, support, and resources for middle school science teachers and school administrators to plan exciting and safer laboratory experiences for students based on prudent professional practices and legal safety standards.

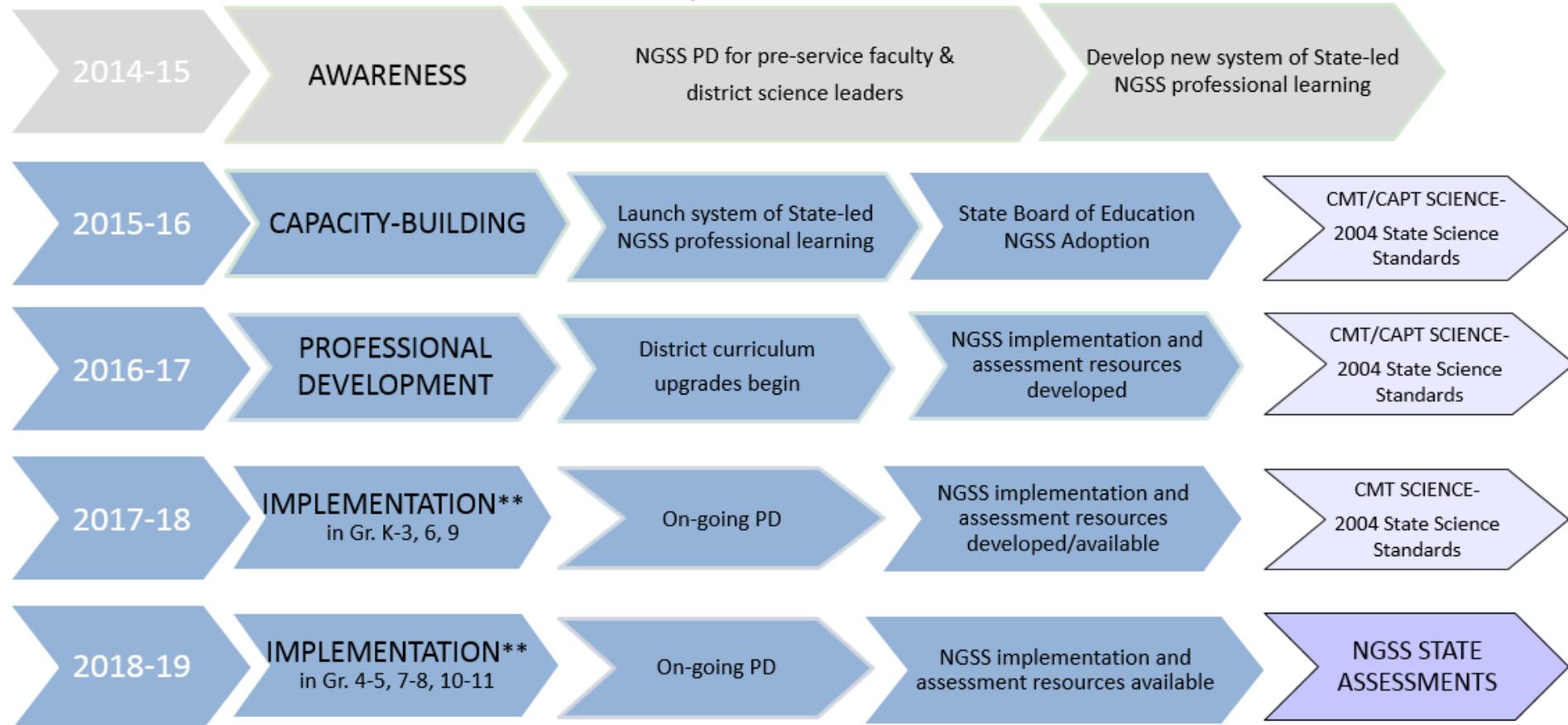
### [Mathematics and Science Partnership \(MSP\) Program](#)

The Mathematics and Science Partnership (MSP) program is intended to increase the academic achievement of students in mathematics and science by enhancing the content knowledge and teaching skills of classroom teachers.



# DRAFT\* 5-Year NGSS Implementation Timeline

September 2017



\*\* An option for transitioning away from current state standards to teaching NGSS.

*Districts have flexibility to develop their own transition and implementation plans.*



# Professional Learning Opportunities

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- [\*Next Generation Science- CT Short Course\*](#)
- No-cost/Self-paced
- 11 modules offering 16 to 60 hours of structured professional learning
- Available to all CT educators since 2016
- [\*NGSS District Transition Planning Workshop\*](#)
- Start or enhance your district's multi-year science plan
- For vertical teams (example: 1 asst. supt., 2 principals, 1 science coordinator, 2 science coaches)
- Ongoing district support since 2017



- *Next Gen Science Exemplar System (NGSX) Part I*
  - Hands-on, Expert-facilitated, Intro to 3-D learning/teaching
  - 6 module series over 4 ½ days
  - Tuition based (fixed costs)
  - 36 hours of seminar-style instruction/participation
  - Take's a “deep” dive into NGSS pedagogy
- *Taking it Back to the Classroom (NGSX) Part II*
  - Hands-on, Expert-facilitated
  - Focus on support of 3D learning sequences with instructional materials
  - 24 hours of seminar-style learning (pre-req. Part I)
  - Learn how to connect “storylines” to classroom learning and development of curricular units



- **PLANS - Principals Learn About, Network, and Support 3-Dimensional Science Learning**

- Awareness PD designed for Administrators/Evaluators
- Expert facilitated in 1 1/2 days
- Focus on evaluation “look fors”
- Several opportunities planned for 2018/2019

- ***Curriculum Unit Development Institute (CUDI)***

- Designed for curriculum writers and teachers
- Expert facilitated
- 5 days
- Offered through the CT RESC system



# More Opportunities/Resources ...

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- [Why NGSS...?](#) 2-day NGSS Awareness PD
- [Achieve, Inc.](#)
  - Evaluating Commercial Instructional Materials  
[Equip Rubric Vers. 3](#)  
[PEEC-Primary Evaluation of Essential Criteria](#)  
[Monthly Science Bulletin](#)
- [National Science Teachers Association](#)
  - [Books and Resources](#)
  - [Freebies for Science Teachers](#)
- [NextGenScience.org](#)
  - [NOW Newsletter](#)
- [MSP](#) / [TQP grants](#) CT teachers developing NGSS materials



# More Opportunities/Resources ...

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- [Connecticut Science Teachers Association](#)  
Connecticut Science Educators Conference  
Saturday, November 18, 2018
- [Connecticut Science Supervisors Association](#)  
Resources and materials
- [Connecticut Science Center](#)  
Inquiry Institutes/Workshops  
NGSS Curriculum Development Institute  
The Practice of NGSS workshops



# CSDE NGSS Resources

- Connecticut NGSS Parent Toolkit is a short document that will guide parents to better understand the shifts in science education demanded by the NGSS. It includes many useful links to resources that will help parents identify the various components of an exemplary science program.

[https://portal.ct.gov/-/media/SDE/Science/NGSS\\_Parents.pdf?la=en](https://portal.ct.gov/-/media/SDE/Science/NGSS_Parents.pdf?la=en)

- Connecticut NGSS Toolkit for Local School Boards is a tool that will help guide school board members to better understand the shifts in science education demanded by the NGSS. It includes useful links to resources that will guide school boards to identify the complex components of an exemplary science program.

[https://portal.ct.gov/-/media/SDE/Science/NGSS\\_Boards.pdf?la=en](https://portal.ct.gov/-/media/SDE/Science/NGSS_Boards.pdf?la=en)



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## A TOOLKIT FOR PARENTS AND FAMILIES

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### A New Vision for Science Education

Children are naturally curious about the world. While many adults recall learning science by reading about it in a textbook or listening to a teacher's explanation, we now know how to engage learners in more meaningful, lasting and exciting science learning.

By dramatically changing the way science is taught and learned, the Next Generation Science Standards (NGSS), adopted by Connecticut in November 2015, are designed to raise interest, participation and achievement for all students. This introductory [video](#) explains the design principles and key features of NGSS. This [fact sheet](#) summarizes the need for and development of NGSS.

Like learning to ride a bike or play a musical instrument, the experience of doing science is far more important than just reading about it in a book. Based on years of research about how people learn science, the NGSS promote a new way of teaching and learning that allows students to actively do science in a meaningful way, not just learn about it from a textbook or a lecture. For students, next generation science means more “figuring out” and less just “learning about” science ideas. In this way, knowledge is retained and built upon for a lifetime.

Decades of research have led to recommended improvements to science education. Among these is a more authentic approach to [scientific inquiry](#), the discovery process practiced by scientists that is more flexible and iterative than the scientific method traditionally taught in schools. This [poster](#) highlights new NGSS approaches that aim to involve all students in figuring out explanations based on critical analysis of evidence. To ensure

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## **A TOOLKIT FOR LOCAL SCHOOL BOARDS**

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### **A New Vision for Science Education**

Children are naturally curious about the world. While many adults recall learning science by reading about it in a textbook or listening to a teacher's explanation, we now know how to engage learners in more meaningful, lasting and exciting science learning.

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Decades of research have resulted in increased understanding of how to engage diverse learners so that knowledge is retained and built upon for a lifetime. Our nation's leading scientists and science educators were convened by the National Academies of Science in 2012 to synthesize this research and recommend improvements to U.S. science education. These are reported in the Framework for K–12 Science Education (National Research Council, 2012). Among the envisioned improvements is a more authentic approach to [scientific inquiry](#), the discovery process practiced by scientists that is more flexible and iterative than the scientific method taught in schools. This [poster](#) highlights new NGSS approaches that aim to involve all students in figuring out explanations based on critical analysis of evidence. To summarize, an NGSS learning approach teaches students to think on their own and in collaboration with others.

NGSS are aligned with contemporary expectations for college-level science courses. Beginning in 2012, the College Board redesigned Advanced Placement exams in STEM subjects (e.g., biology, chemistry, physics, computer science) to emphasize the use of science practices to reason with evidence (see [summary of AP STEM advances](#)). To help states and districts reform their science programs to better prepare more students

# The Five Tools and Processes for Translating the NGSS

The *Next Generation Science Standards* (NGSS) challenge teachers to think deeply about learning and teaching with the goal of developing a clear vision of science education that is coherent, focused, and rigorous. These tools are designed to help professional development leaders work with teachers on curriculum, instruction, and assessment. (American Museum of Natural History in collaboration with BSCS and the K-12 Alliance at WestEd.) <https://www.amnh.org/explore/curriculum-collections/five-tools-and-processes-for-ngss>



# The NGSS EQuIP Professional Learning Facilitator's Guide

- A series of 10 modules that were designed to provide guidance on building the capacity of educators and education leaders to use the EQuIP Rubric for Science.
- Completing will provide science educators/leaders with the processes and procedures necessary to use the EQuIP Rubric to review science lessons and units.
- Will provide effective feedback and suggestions for improvement to developers and users of these instructional materials.
- Will identify model or exemplar lessons and units, and to inform the development of new instructional materials.

<https://www.nextgenscience.org/resources/equip-professional-learning-facilitator%E2%80%99s-guide-v20>



# Building Towards NGSS Classroom Series

These Teaching Channel videos, developed in partnership with Achieve, help teachers transition classroom instruction to meet the goals of NGSS. The series includes:

- First Steps Towards Transitioning to the NGSS
- Making Claims From Evidence, Energy & Matter Across Science Disciplines
- Working as a Team

<https://www.teachingchannel.org/video/transition-to-ngss-achieve>



# Tools for Ambitious Science Teaching

This website offers strategies and tools for designing teaching experiences that engage all students in meaningful forms of science learning.

Materials support NGSS instructional strategies.

<https://ambitiousscienceteaching.org/>



# Bozeman Science – Next Generation Science Standards Video Series

Next Generation Science Standards Video Series covers the concepts contained within the K-12 Science Framework. The 60 videos contain: an NGSS overview, 8 practices, 7 crosscutting concepts, and 44 disciplinary core ideas.

[https://www.youtube.com/playlist?list=PLlVwaZQkS2rtZG\\_L7ho89oFsaYL3kUWq](https://www.youtube.com/playlist?list=PLlVwaZQkS2rtZG_L7ho89oFsaYL3kUWq)



# Talk Science Professional Development

This component of The Inquiry Project (TERC) is designed to increase the effectiveness of discourse in Grades 3 through 5 science classrooms. The focus is on meaning-making and strategies to support productive discussion. Video case studies are included.

[https://inquiryproject.terc.edu/prof\\_dev/pathway/](https://inquiryproject.terc.edu/prof_dev/pathway/)



# NGSS Storylines

Next Generation Science Storylines project is dedicated to providing tools that support teachers in developing, adapting, and teaching with strongly aligned NGSS materials in classrooms around the country.

Check out the latest NGSS Storylines at <http://www.nextgenstorylines.org>



# Questions?

For information about **NGSS Standards Implementation, Instruction, Curriculum Resources** in Connecticut contact:

## **Ron Michaels**

CT State Department of Education

Academic Office

860 713-6851

[Ronald.Michaels@ct.gov](mailto:Ronald.Michaels@ct.gov)

For information about **NGSS Assessments (Regular/Special Education, Interims)** in Connecticut contact:

## **Jeff Greig**

CT State Department of Education

Performance Office

860 713-6854

[Jeff.Greig@ct.gov](mailto:Jeff.Greig@ct.gov)



# Update on Next Generation Science Assessments



**Presenter: Jeff Greig**  
CT State Department of Education  
Performance Office



# Spring 2019 Science Assessments

First live test administration. All students in Grades 5, 8 and 11 must participate.

Assessment	Grades	Testing Window
NGSS Standard Assessment	11	February 4 – June 7, 2019
NGSS Standard Assessment	5 and 8	March 25 – June 7, 2019
CT Alternate Science Assessment (CTAS) Online Submission	5, 8 and 11	March 25 – June 7, 2019

Standards will be set following the spring administration.

Results will be reported for students, schools and districts. Participation (target = 95%) and performance results will be included in school and district accountability.



# Proposed System of NGSS Assessments

The goal is to provide useful information for a variety of purposes and audiences.

**Formative Assessments Resources:** Used every day by teachers to monitor student learning in the classroom and help make ongoing instructional adjustments to meet student learning needs. **VOLUNTARY**

**Interim Assessments Resources:** Assessments administered at the end of units or grades to evaluate the learning of groups of students to inform curriculum and instruction at the local level. **VOLUNTARY**

**State Summative Assessments:** Assessments given at end of learning (Grades 5, 8 and 11) to track student learning and inform decisions about curriculum, instruction, professional development, and policy for a variety of stakeholders. **MANDATED BY FEDERAL AND STATE LAW**

↑  
Greater frequency of use  
More useful to students and teachers

Formative and interim assessment resources will likely come from a variety of sources and be shared by states around the country.



# Collaborative NGSS Assessment Development

CT is working with several other states and our testing contractor, American Institute for Research (AIR), to develop and share NGSS assessment resources and an item pool. States will have their own science assessments.

Hawaii

Idaho

Utah

Oregon

West Virginia

Rhode Island

Vermont

Wyoming



# NGSS Committees of CT Educators

## State Science Assessment Advisory Committee (SSAAC)

Advise on the development of the NGSS assessment system. Help develop and review items for the statewide NGSS assessments. Includes approximately 60 science educators representing various districts, grades and content areas.

## Science Fairness and Accessibility Committee (FAC)

Advise on fairness and accessibility issues for all students regardless of their background or abilities related to NGSS assessments. Includes approximately 20 educators with a variety of backgrounds and expertise.

## District Advisory Committee (DAC)

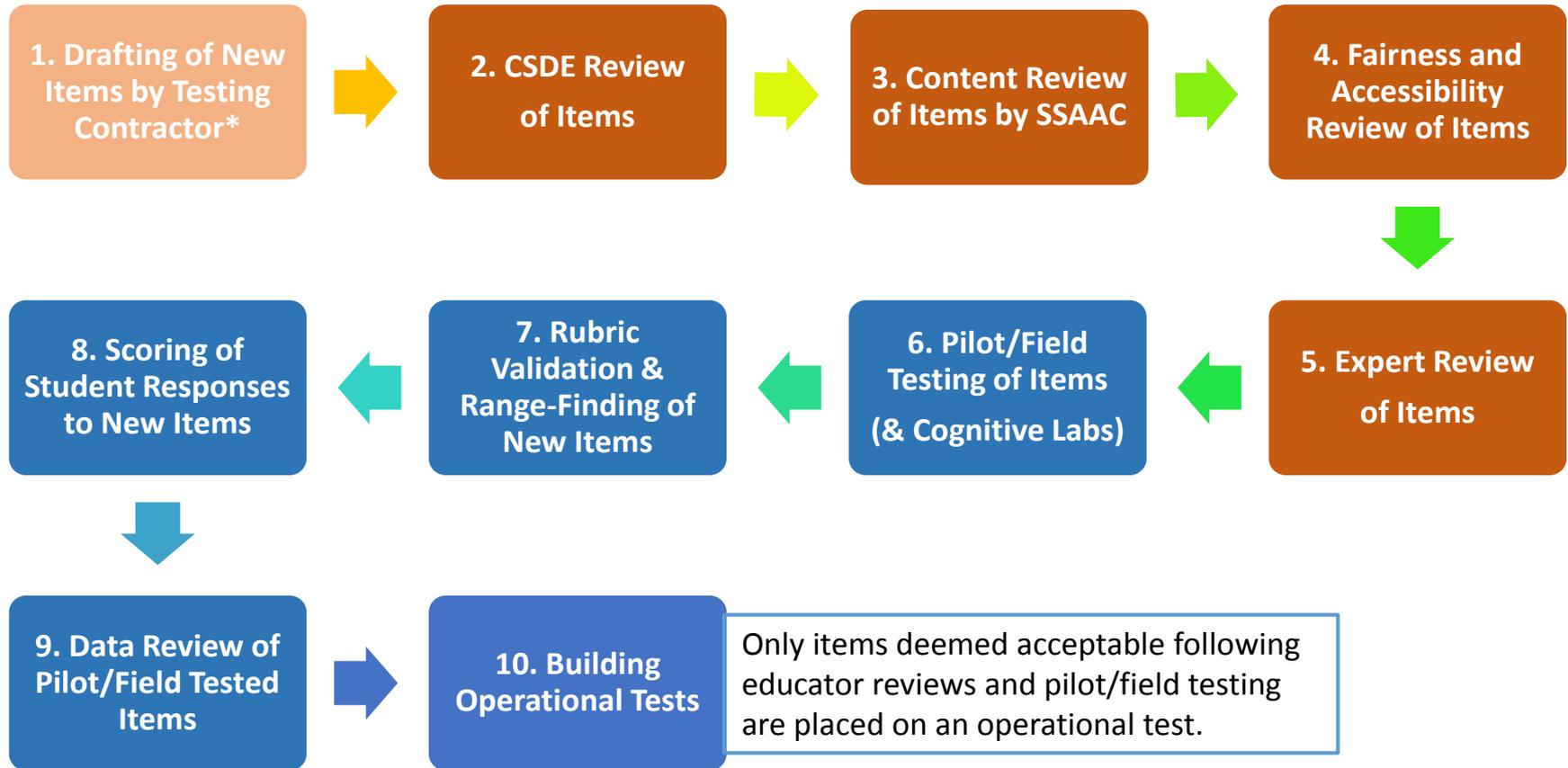
Advise on “big picture” issues related to NGSS implementation, professional development, curriculum and assessment development. Includes science leaders and administrators representing over 100 school districts around the state.

Contact Jeff Greig ([Jeff.Greig@ct.gov](mailto:Jeff.Greig@ct.gov)) if interested in the SSAAC or FAC.

Contact Ron Michaels ([Ronald.Michaels@ct.gov](mailto:Ronald.Michaels@ct.gov)) if interested in the DAC.



# NGSS Assessment Item Development Process (1-2 Years)



\*CT science educators from the State Science Assessment Advisory Committee (SSAAC) and Science Fairness and Accessibility Committee (FAC) help generate phenomena and ideas for assessment items.

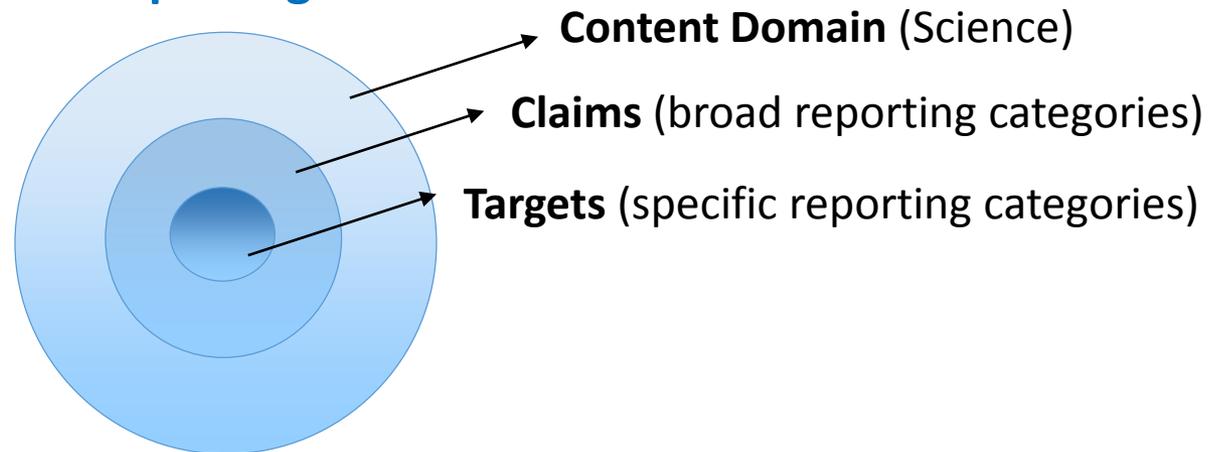


# NGSS State Summative Assessments

**Two main purposes:** provide valid and reliable results at the individual student level and useful feedback to schools, districts and the state.

**Test Design:** Likely matrix design and/or computer adaptive design (in the future).

## Claims and Targets for Reporting:



**Claims:** Students use science and engineering practices and apply their understanding of disciplinary core ideas and crosscutting concepts to make sense out of real-world phenomena.



# NGSS State Summative Assessments

**Target-level Reporting:** The following **may** be available for schools and districts:

- Topic Areas or DCI Arrangements + Engineering
- Individual Performance Expectations
- Groupings of Science and Engineering Practices
- Groupings of Cross-Cutting Concepts

The table below shows the description of each of the assessment targets to be reported.

Symbol	Target Level	Description
+	Better than performance on the test as a whole	This target is a relative strength. The group of students performed better on items from this target than they did on the rest of the test as a whole.
=	Similar to performance on the test as a whole	This target is neither a relative strength nor a relative weakness. The group of students performed about as well on items from this target as they did on the rest of the test as a whole.
-	Worse than performance on the test as a whole	This target is a relative weakness. The group of students did not perform as well on items from this target as they did on the rest of the test as a whole.
*	Insufficient Information	Not enough information is available to determine whether this target is a relative strength or weakness.

The reporting descriptions shown above are consistent with Smarter Balanced assessments.



# NGSS State Summative Assessments

Items assess the **three dimensions** of the performance expectations.

The live tests for each student will include **12 stand-alone items and 6 item clusters**.

Additional items being field tested are added (1 cluster or 6 stand-alone items).

**The NGSS tests are untimed** - students may have as much time as they need. Tests may be administered on a single day (with a break) or over multiple days. Students may be cycled through rooms with computers.

**Variety of item types** including innovative items such as interactions and simulations.

**Less emphasis** placed on the areas of *Earth's Place in the Universe* and *Waves and their Applications* at Grade 11 (based on feedback from District Advisory Committee).

**Using guidance from Smarter Balanced** in terms of item formats, style, wording, etc. (modifying and adding to as needed for science) to maintain consistency.

A variety of universal tools, designated support and accommodations are available to make the assessments accessible to all students. See the current version of the **Assessment Guidelines** at the CSDE Web site: [www.ct.gov/sde](http://www.ct.gov/sde).



# State Summative Assessments



## Universal Tools: Available to ALL students

### Embedded

- Breaks
- Calculator (Math Grades 6-8; Science Grades 5, 8, & 11)
- Digital Notepad
- English Glossary<sup>^</sup>
- Expanded Passages/Stimuli
- Highlighter
- [Keyboard Navigation](#)
- Line Reader
- Mark for Review
- Math Tools
- Strikethrough
- Writing Tools
- Zoom

### Non-Embedded

- Breaks
- Scratch Paper/whiteboard with marker

<sup>^</sup> NOT available for Science

## Designated Supports: Available to ANY student with a need determined by educators

### Embedded

- Color Contrast
- Masking
- Mouse Pointer
- Print Size Online
- Streamline **New**
- Text-to-Speech- Science, Math & ELA Non-Reading Passages
- \*Translations-Math (Glossary)
- \*Translations-Math (Stacked)
- \*Translation Test Directions (Math, Spanish)
- Turn off any universal accessibility tool

### Non-Embedded

- Amplification
- \*Bilingual Dictionary (Science)
- Color Contrast
- Color Overlay
- Magnification Device
- \*Native Language Reader Directions (Science)
- Noise Buffering
- Read Aloud
- \*Read Aloud in Spanish (Math)
- Separate Setting
- Simplified Test Directions<sup>^</sup>
- \*Translation Glossary (Math)
- \*Translation Test Directions<sup>^</sup>

\*Intended for English Learners (EL)

## Accommodations: Available to students with an IEP or 504 Plan

### Embedded

- American Sign Language (Video)<sup>^</sup>
- Braille Embosser (Math & ELA: Contracted, Uncontracted)<sup>^</sup>
- Braille Transcript (ELA Listening)
- Closed Captioning (ELA Listening)
- Refreshable Braille (ELA: Contracted, Uncontracted) <sup>^</sup>
- Text-to-Speech ELA Reading Passages (Grades 3-8)

<sup>^</sup> NOT available for Science

~ Requires Trained Educator

# Requires Petition for Approval of Special Documented Accommodations

### Non-Embedded

- [100s Number Table](#) (Grades 4-8)
- Abacus
- Alternate Response Options
- Braille Booklet
- Braille supplemental math booklet for online fixed form test
- ~ # Human Signer for ELA or Math Items
- ~ # Human Signer for ELA Reading Passages (Grades 3-8)
- Human Signer for Science items
- Large Print Booklet
- [Multiplication Table](#) (Grades 4-8)
- # Print on Demand
- ~ # Read Aloud ELA Reading Passages (Grades 3-8)
- ~ # Scribe
- Specialized Calculator (Math Grades 6-8; Science Grades 5, 8, & 11)
- Speech-to-Text

<sup>^</sup> NOT available for Science

# NGSS Item Specifications

- Guide the development and review of assessment items.
- Developed for each performance expectation (Grade 3 - High School).
- Reviewed by national NGSS experts and science educators from various states, including CT.
- Go beyond the published standards to include:
  - Additional content limits and guidance
  - Acceptable and unacceptable vocabulary
  - Sample phenomena
  - Task demands (specific tasks that students might be asked to do in the items, based on the evidence statements).

**Will be made public soon.**



# NGSS Online Assessments: Item Clusters

## Start with stimuli based on real-world phenomena:

- Written text
- Data in tables or graphs
- Diagrams, drawings, maps, etc.
- Animations
- Simulations

Use to answer

## Variety of item types including:

- Selected-Response
  - Constructed Response
  - Multi-Select
  - Graphic Response
  - Edit Task Inline Choice
  - Table Input
  - Technology-Enhanced:
    - Interactions
    - Simulations
- New item types may be developed over time.

Items clusters present students with stimuli and items using a split screen.



# NGSS Online Assessments: Stand-Alone Items

Start with short stimuli based on real-world phenomena.

Generally 1 or 2 item interactions

Stand-alone items present students with stimuli on top with item interaction(s) below.



# Sample NGSS Assessment Item Clusters

<http://ct.portal.airast.org>

The screenshot shows the homepage of the Connecticut State Department of Education Comprehensive Assessment Program Portal. The navigation bar includes links for Home, Get Started, Resources, FAQs, Supported Browsers, Register for email updates, and Manage Settings. The main header features the CSDE logo and the text 'CONNECTICUT STATE DEPARTMENT OF EDUCATION COMPREHENSIVE ASSESSMENT PROGRAM PORTAL'. On the left, there is a vertical menu with icons and labels for 'Students & Families', 'Smarter Balanced Assessment', 'CMT/CAPT Science', 'NGSS Pilot', 'Connecticut Alternate Assessments', and 'Connecticut SAT School Day'. The central content area is titled 'Recent Announcements' and contains a microphone icon, a list of announcements, and a 'Note' section. The right sidebar is titled 'Welcome!' and contains a list of links: 'Important Dates', 'Secure Browsers', 'Practice & Training Tests', 'NGSS Sample Items' (circled in red), and 'Contact Us'.

Home Get Started Resources FAQs Supported Browsers Register for email updates | Manage Settings

**CONNECTICUT STATE DEPARTMENT OF EDUCATION**  
COMPREHENSIVE ASSESSMENT PROGRAM PORTAL

**Students & Families**

**Smarter Balanced Assessment**

**CMT/CAPT Science**

**NGSS Pilot**

**Connecticut Alternate Assessments**

**Connecticut SAT School Day**

**Recent Announcements**

- As a reminder: For Windows users, if your school has NeoSpeech voice packs installed on your computers used for the Connecticut Comprehensive Assessments with Text-to-Speech, you will need to renew your NeoSpeech voice pack licenses.

**Note:** Schools do not need to re-install the voice pack software, only the licenses. To ensure that your computer's voice packs continue to function as expected, please download the updated licenses in TIDE under General Resources > Download Voice Pack and transfer the licenses to the appropriate license folders on Windows machines following the instructions available in the Updating the NeoSpeech Licenses document. On May 3, 2017, the current license for the Julie voice packs will expire.

*Added May 2, 2017*

- The test window for the **Next Generation Science Standards (NGSS) Assessment Pilot** is from May 1<sup>st</sup> to May 26<sup>th</sup>. For participating districts, several resources are now available. These resources are appropriate for schools that were randomly selected for the pilot and also for those that volunteered to participate. These resources include:
  - NGSS Sample Items are available at the elementary-,

**Welcome!**

Welcome to the Connecticut Comprehensive Assessment Program Portal. This site provides access to resources for the Smarter Balanced Assessments in Mathematics and English Language Arts/Literacy, CMT/CAPT Science Assessments, and the Alternate Assessment.

**Important Dates**

**Secure Browsers**

**Practice & Training Tests**

**NGSS Sample Items**

**Contact Us**

Updated NGSS Practice Tests will be available on **October 31**. Will include item clusters and stand-alone items with all item interaction types.

Currently, five item clusters at each grade band.



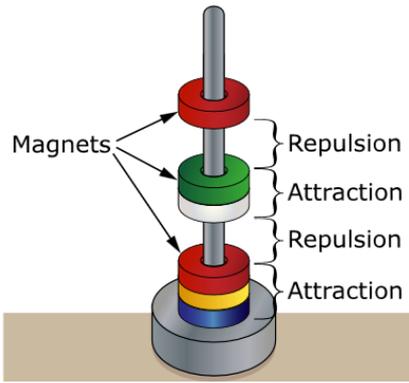
# Sample NGSS Assessment Items: Elementary School



Two magnets are placed right next to each other. They seem to pull together. A third magnet is then placed right next to the first two magnets. This magnet seems to push away from the first two.

The ability of magnets to attract and repel each other is shown in the Attraction and Repulsion between Magnets picture. In this picture, some of the magnets are floating due to their ability to repel other magnets.

## Attraction and Repulsion between Magnets



### Your Task

In the following questions, you will set up and perform an experiment that will help you understand what affects the force between the two magnets.

### Aligned to 3-PS2-3

Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.



### Part A

Select a testable, scientific question that can be answered by performing an experiment with the setup shown in the Hanging Magnets Experiment picture.

- A How does the distance between the magnets affect the force?
- B How does the orientation of the magnets affect the force?
- C Will the force between the magnets always exist?

### Part C

Use the Hanging Magnets Experiment simulation to run the experiment and gather observations to answer your question from part A.

First, select the Distance and Orientations. You must select an orientation for each magnet in each trial. Then, click Start to run the simulation.

- You will be limited to **three** trials in the experiment.
- Be sure the final data table includes data that answers your question.
- Click on the trash can button if you want to delete a row and generate new data.

### Hanging Magnets Experiment

Distance Far

Orientation of Magnet 1

Orientation of Magnet 2

Trial Number	Distance	Orientation of Magnet 1	Orientation of Magnet 2	Observations

### Part D

Click the box to select the answer to the question you decided to test in part A, based on the results of the experiment you ran in the simulation.

### Result of Experiment

#### Answer to Question



**Part A**

Click on each blank box to select the word or phrase that completes each sentence, constructing an argument about what happens when the train's brakes are applied.

Applying the brakes causes the  to transfer kinetic energy to the . This causes the  to slow down and have  kinetic energy, which slows the train.

**Part B**

When the train applies its brakes, what happens to the energy of the surroundings?

- A The surroundings gain energy.
- B The surroundings lose energy.
- C The surroundings do not gain or lose energy.
- D There is not enough information to determine the energy of the surroundings.

**Part C**

Which **three** statements support your choice in part B?

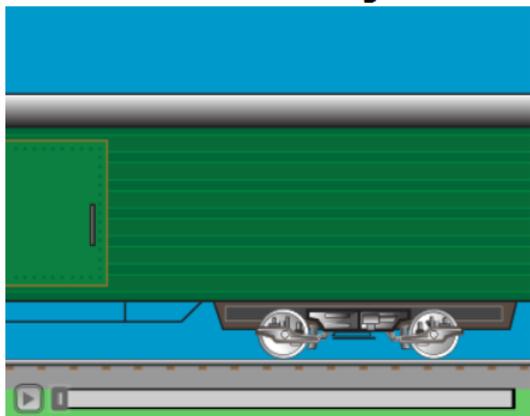
- The train maintains its speed.
- Sound is produced.
- Sound is consumed.
- Light is produced.
- Light is consumed.
- Heat is produced.
- Heat is consumed.

**Aligned to MS-PS3-5**  
Construct, use and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

Sparks fly off the wheels of a train when the brakes are applied.

Click the small gray arrow to see a demonstration of this happening in Animation 1.

**Animation 1. Braking Train**



**Table 1. Properties of the Train System**

Before Brakes Are Applied	After Brakes Applied
No sparks	Sparks fly off the wheels and brake pads
Brake pads make no sound	Brake pads make sound
Brake pads are cold	Brake pads are hot
Wheels are warm	Wheels are hot
Rails are warm	Rails are warmer
Train is moving fast	Train is moving slow

**Your Task**

In the questions that follow, you will analyze what happens to the train when the brakes are applied.

# NGSS Sample Items: Settings and Instructions

## Choose Settings:

Review the following test settings. You can change the options, if necessary.

### Science Sample Items

**Literacy Assistance Tools**

?	Text to Speech	None
?	TTS Tracking	<input checked="" type="checkbox"/> ON

**Visual Assistance Tools**

?	Color Choices	Black on White
?	Mouse Pointer	System Default
?	Streamlined Mode	<input type="checkbox"/> OFF
?	Zoom	1X

**Concentration Assistance Tools**

?	Line Reader	<input type="checkbox"/> OFF
?	Masking	<input type="checkbox"/> OFF

### Next Step:

To test with these settings, choose **Select**. To select a different test, choose **Go Back**.

Select

Go Back

Text-to-Speech available for all students.  
Must be set in TIDE.

## Sound and Video Playback Check

Make sure video and audio playback are working. To play the sample video and sound, press the play button.

Headphones needed only for Text-to-Speech



### Next Step:

If you were able to play the video and its sound, choose **I could play the video and sound**. If not, choose **I could not play the video or sound**.

I could play the video and sound

I could not play the video or sound

## Instructions and Help

You may select the question mark button to access this Help Guide at any time during your test.

Select the text you want to hear and click the green button to have it played.

Sample Test Page

### Next Step:

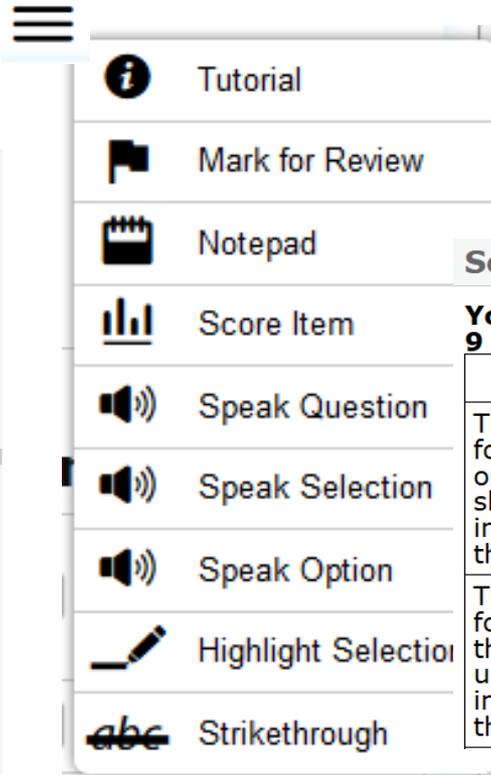
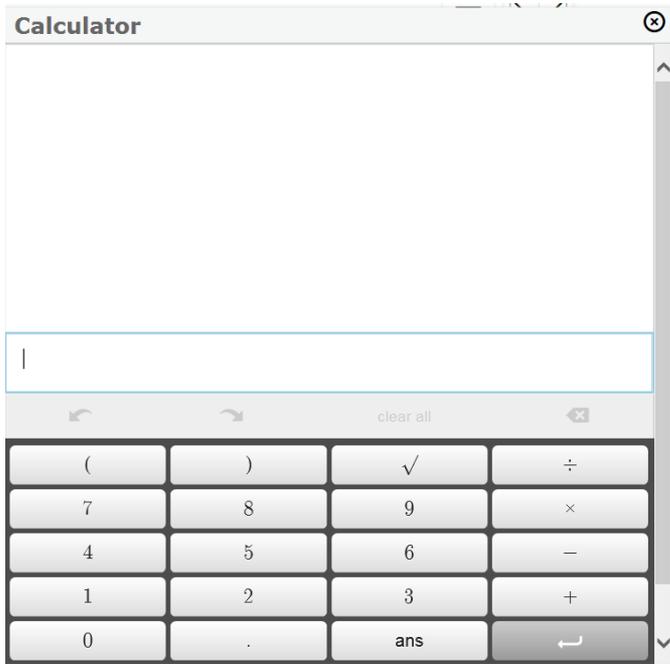
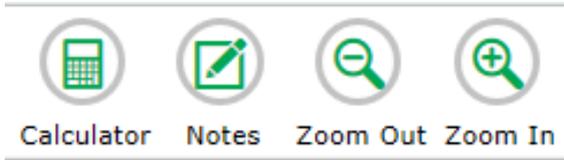
To begin your test, choose **Begin Test Now**. If your Test Administrator tells you to log out, choose **Return to Login**.

Begin Test Now

Return to Login



# NGSS Sample Items: Online Features and Tools



Score Item feature allows for instant feedback to students.

**Scoring Results for Item #5**

Your response earned **1** point(s) of a possible **9**

Scoring Criteria	Your Answer
The student selected "wheels" for the first blank and "brakes" or "rails" for the second blank showing an understanding of the interactions in the system and the effects of that energy flow.	✓
The student selected "wheels" for the third blank and "less" for the fourth blank showing an understanding of the interactions in the system and the effects of that energy flow.	✗

Desmos calculators used (same as for Smarter Balanced mathematics). Calculator features are specific to the grade (Grade 5 shown above).



Periodic Table available at Grades 8 and 11. Printable version will also be available.



# May 2018 NGSS Assessment Field Test

**Purpose:** Try out new NGSS assessment items and gather data/feedback.

**Dates:** March 26 – May 25, 2018 for Grade 11

April 30 – May 25, 2018 for Grades 5 and 8

**Students:** All students in Grades 5, 8 and 11 participated.

**Administration:** Online using AIR's Test Delivery System (TDS).

**Time:** Estimated 90 minutes plus 10 minutes for directions. Test was untimed. Students could have as much time as they needed.

**Feedback:** Students and teachers were asked to complete optional feedback surveys.

**Results:** No results are reported publicly. Participation rate was used for school and district accountability.



# May 2018 NGSS Assessment Field Test

## Review of Items

NGSS assessment items field tested have been reviewed for:

- Item difficulty and correlations
- Performance by various groups of students (e.g., gender, ethnicity, EL, etc.)
- Time for each item to be completed by students

Items reviewed by CSDE, AIR, and committees of science educators.

Only items deemed acceptable will appear on live NGSS assessments.

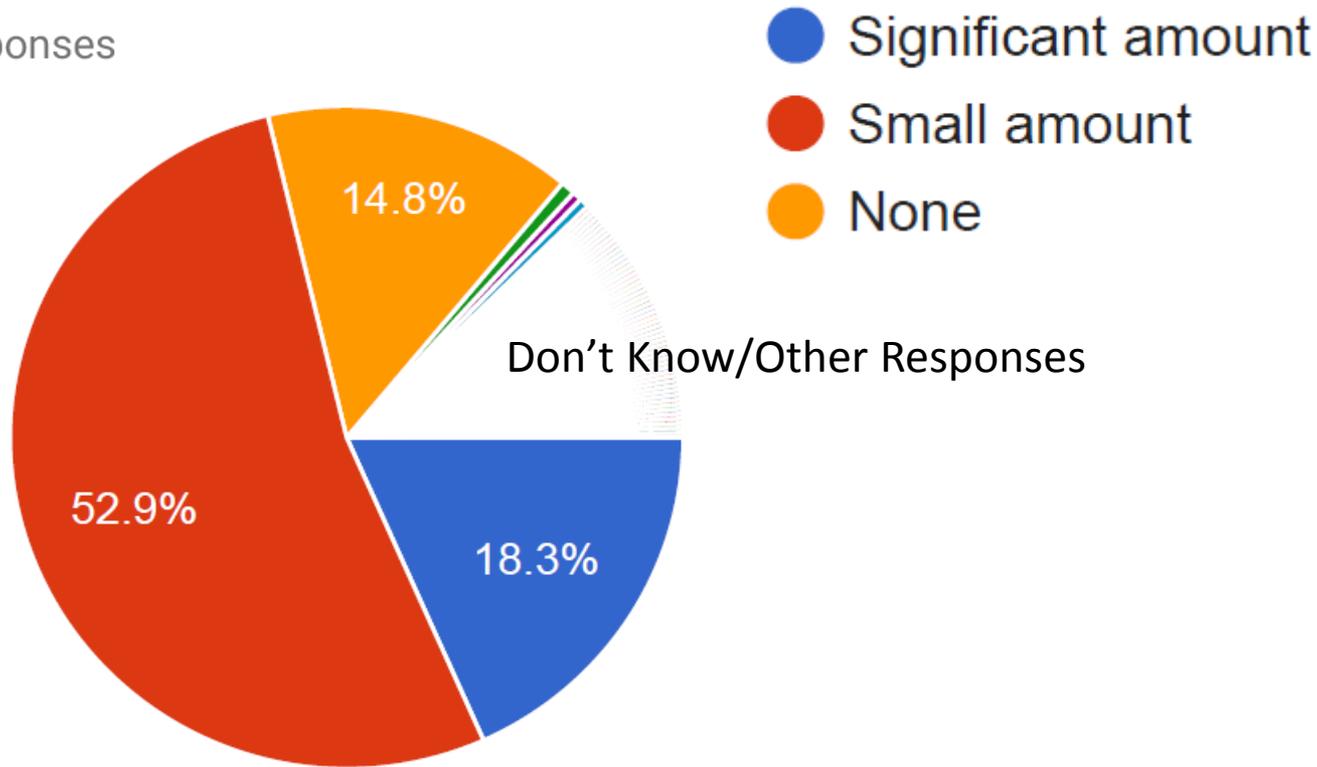


# May 2018 NGSS Assessment Field Test

## Feedback from District Staff Surveys

5. Which of the following best describes the amount of NGSS instruction that students who participated in the field test have had?

431 responses

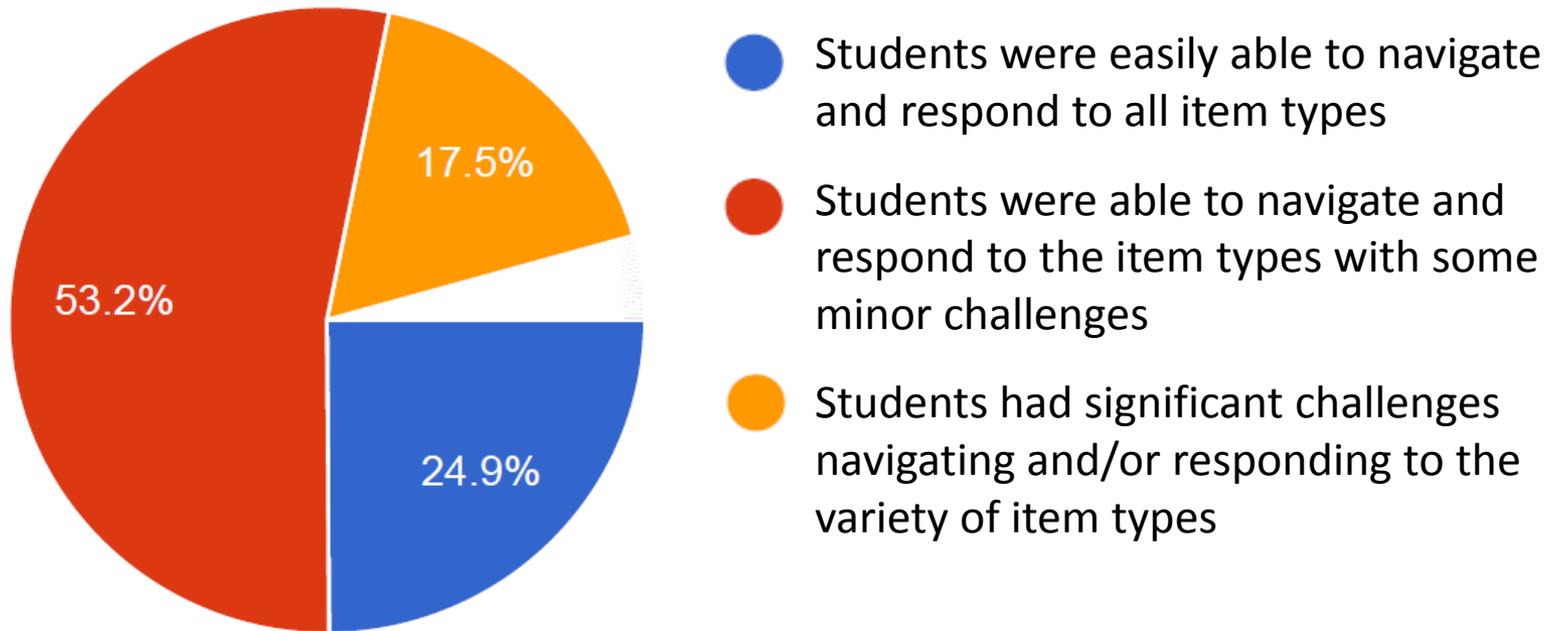


# May 2018 NGSS Assessment Field Test

## Feedback from District Staff Surveys

7. Based on your observations, how would you best describe students' understanding of how to navigate and respond to the various item types they experienced on the field test?

462 responses

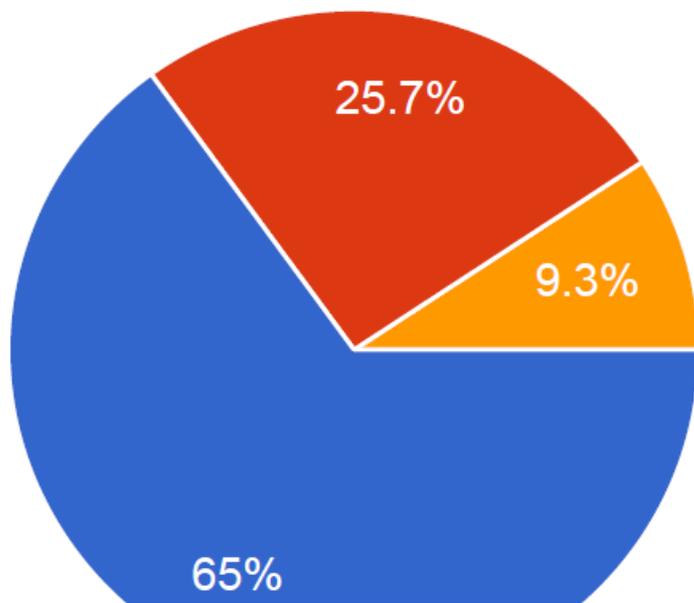


# May 2018 NGSS Assessment Field Test

## Feedback from Student Surveys

4. Did you have enough time to finish the science field test?

14,285 responses



- Yes, I had plenty of time.
- Yes, I had just enough time.
- No, I needed a little more time.

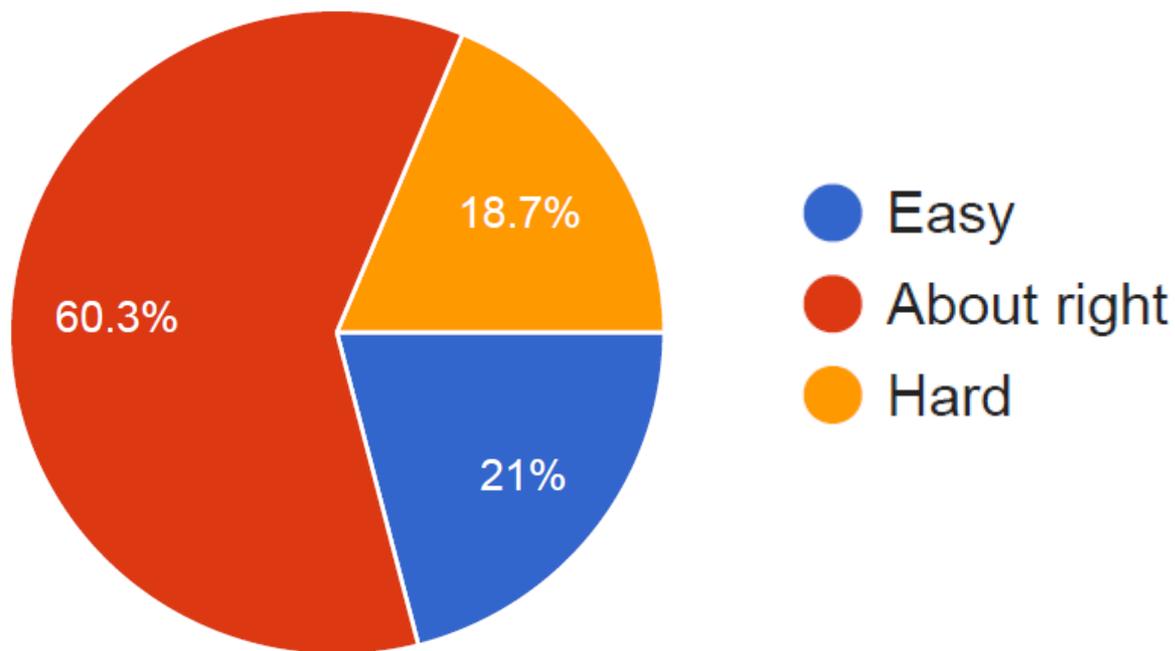


# May 2018 NGSS Assessment Field Test

## Feedback from Student Surveys

6. How would you best describe the level of reading, including vocabulary, on the science field test?

14,269 responses

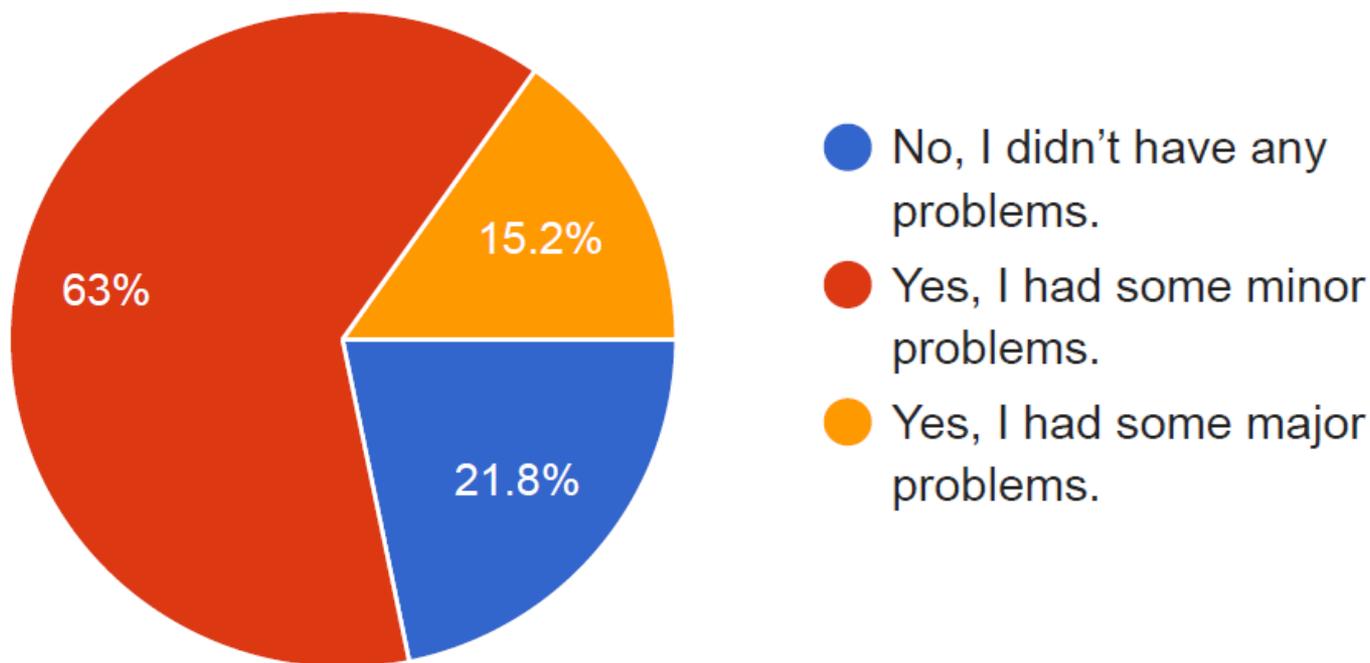


# May 2018 NGSS Assessment Field Test

## Feedback from Student Surveys

7. Did you have any problems understanding how to answer any of the types of questions on the science field test?

14,314 responses

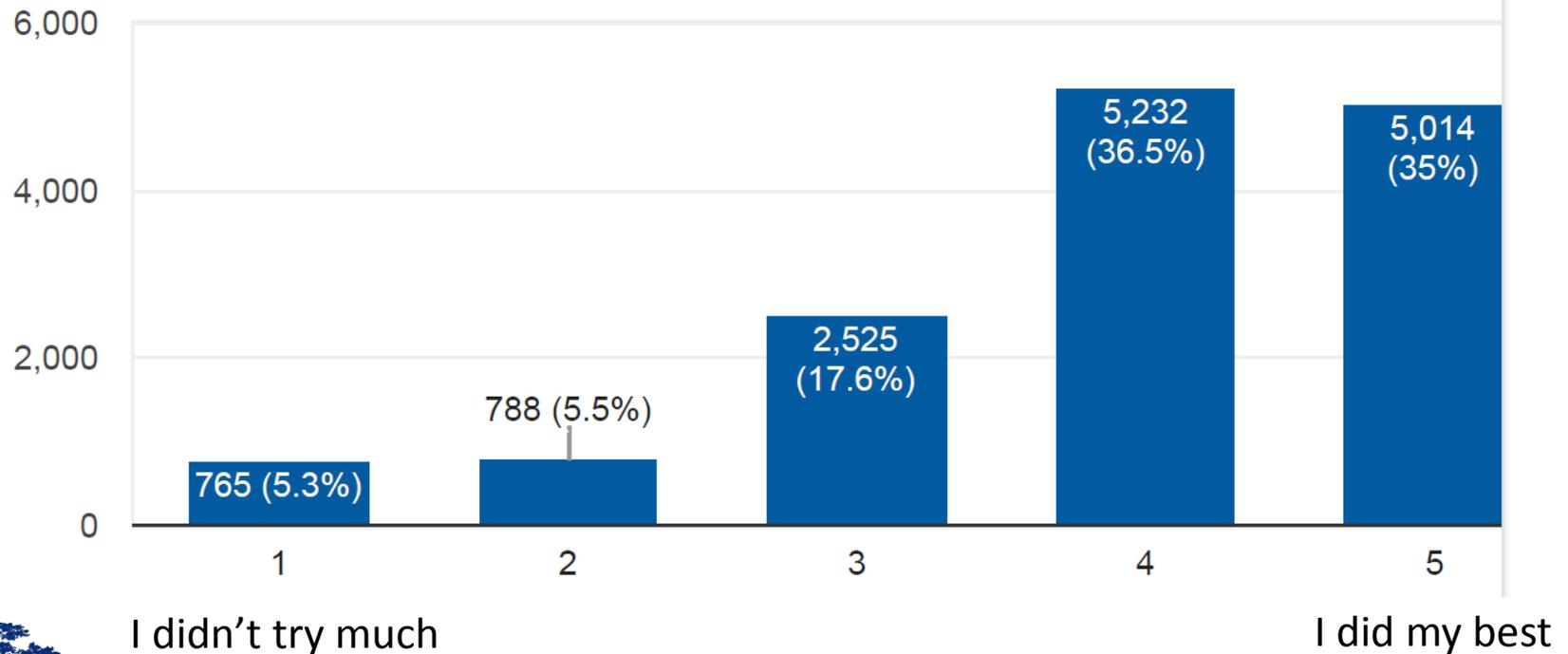


# May 2018 NGSS Assessment Field Test

## Feedback from Student Surveys

8. On a scale from 1 to 5, rate how hard you tried to answer the test questions correctly:

14,324 responses



# May 2018 NGSS Assessment Field Test

## Feedback from Student Surveys: by Grade

8. On a scale from 1 to 5, rate how hard you tried to answer the test questions correctly?

Grade	(I didn't try much) 1	2	3	4	(I did my best) 5	Number of Response
5	1.0%	1.5%	9.8%	36.2%	51.5%	3,286
8	2.9%	3.5%	16.6%	42.6%	34.5%	3,652
11	14.2%	14.5%	30.4%	27.8%	13.2%	2,403



# NGSS Interim Assessments

- Will be available starting **October 9, 2018**
- For optional use by local school districts
- Administered through AIR's online Test Delivery System (TDS).
- Accessed through the assessment web portal at <https://ct.portal.airast.org>
- Include “testlets” with two item clusters aligned to two different NGSS performance expectations from various topic areas (e.g., Forces and Motion, Ecosystems, Earth Systems). Should take students 15-20 minutes each.
- All items are machine-scored
- Results available immediately at various levels (student, class, school)
- Training will be available



# NGSS Interim Assessments

Screen shot of Grade 5 NGSS Interim Assessments

## Available Tests

Choose a test for data entry.

### Interim Science

 **Start Interim - Science Grade 5 - Earth Systems**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Ecosystems**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Forces and Energy**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Waves**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Weather**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Inheritance**  
This is opportunity 1 of 999

 **Start Interim - Science Grade 5 - Structure Properties**  
This is opportunity 1 of 999



# NGSS Interim Assessments

## Sample score reports through AIRWAYS

AIR Ways

**AIRWAYS** User: Lname, Fname | Role: STATE | State: New Hampshire  
[Inbox](#) [My Settings](#) [Help](#) [Sign Out](#)

Dashboard  [Filters](#) [Print](#)

Average Score and Performance Distribution, by Assessment: Demo District 2, 2017-2018  
 Filtered by **Test Reasons:** All Test Reasons

Assessment Name	Test Reason	Student Count	Average Score	Performance Distribution	Date Last Taken
Interim Grade 3 ELA	Unassigned	1	460	100%	06/07/2018
Interim - Science Grade 11 - Structure Properties	Unassigned	1	5/18	n/a	06/05/2018
Interim - Science Grade 8 - History of Earth	Unassigned	3	5/23	n/a	05/10/2018
Interim Grade 7 ELA	Unassigned	2	510	100%	12/26/2017



Dashboard > District Performance on Test > School Performance on Test

Performance by Roster  Performance by Student

Score, Performance and Points Earned on **Interim - Science Grade 11 - Structure Properties** (Unassigned) of All Rosters, by Student and Reporting Category: Demo School 4, 2017-2018

Filtered by **Test Reasons:** All Test Reasons **Core Idea:** NGSS-HS-PS|PS1

Student	Student ID	Total	Total	Total Items	
		Score	Total Items	Item Numbers and Points Earned	
				18	8
Max Points		5/18	5	n/a	
Everyone		5/18	5	n/a	
	9999990818	5/18	5	n/a	

Raw scores reported



# Questions?

For information about NGSS implementation in Connecticut contact:

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