

NGSS NOW

9 things you need to know about the NGSS in August 2017



1 Leveraging ESSA to promote science and STEM education

SCIENCE AND STEM IN ESSA

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LEVERAGING ESSA TO PROMOTE SCIENCE AND STEM EDUCATION IN STATES



Introduction

The passage of the Every Student Succeeds Act (ESSA) provides states the opportunity to craft new goals and strategies for science education. By setting clear goals for science achievement, states can leverage existing policies, including assessments and graduation requirements, to help drive toward set goals. Generally, states could elect to develop new programs and initiatives using funding provided by ESSA, and/or incorporate science into their new accountability systems. States are crafting their goals and strategies for science education through the development of new consolidated state plans, required by ESSA, and through new programs and initiatives using funding provided by ESSA.

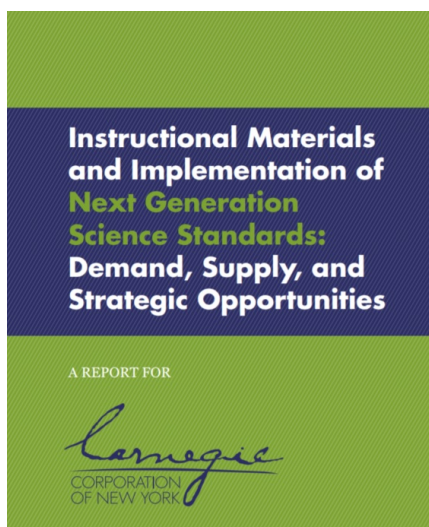
This brief provides a landscape analysis of all states' current assessment requirements and graduation requirements in science to help set the national policy context for science. To look at states' current goals and approaches to science inclusion in their accountability plans under ESSA, as well as how they can leverage funding opportunities in ESSA to support science, this brief limits its scope to only those 16 states and the District of Columbia who submitted plans to the U.S. Department of Education (USED) in the first round of submissions (May 2017). Once the remainder of plans have been submitted, the ESSA-focused sections of this brief will be updated to reflect the remaining states. Further, while the focus of this brief is specifically on science, the way that states develop ESSA strategies does not allow for the disentanglement of science from STEM; therefore, when discussing funding opportunities and state proposals for the use of funds provided through ESSA, the scope will broaden to STEM activities and initiatives.

State Policies Emphasizing Science and STEM

The passage of the Every Student Succeeds Act (ESSA) provides states the opportunity to craft new goals and strategies for science education. By setting clear goals for science achievement, states can leverage existing policies, including assessments and graduation requirements, to help drive toward a set of goals.

[This policy brief](#), developed by Achieve, provides a landscape analysis of all states' current assessment requirements and graduation requirements in science to help set the national policy context for science. [Read more.](#)

2 New report cites challenges finding curricula for NGSS



Eighteen states and the District of Columbia, along with dozens of individual school districts, have adopted the NGSS, which put a heavy emphasis on engineering and having students apply their scientific knowledge.

As states wrestle with putting the standards into action, many are asking what to do about curriculum. The [Carnegie Corporation of New York](#), which provided major support to the groups that developed the framework and standards that evolved into the NGSS, has released [a summary report](#) identifying some of the major challenges in developing high-quality curricula aligned to the standards.

[Read more in this blog post by EdWeek.](#)

3 Featured NGSS unit reviewed by the EQUiP PRP for Science

Achieve's [EQUiP Peer Review Panel \(PRP\) for Science](#) reviews submitted lessons and units to determine whether the instructional resources meet the cognitive demands of the NGSS. After each review, the lessons or units are made publicly available to download and use in classrooms. The featured unit below was submitted by Next Generation Science Storylines and has earned **the 2nd highest rating possible in the EQUiP Rubric for Science.**

Unit Name: Why is Our Corn Changing?

Grade Level: 2

Synopsis: *This second grade unit on plant growth starts off with students exploring the mystery of their harvest corn, something they initially saw as decoration, beginning to sprout what look like leaves and roots. Disagreements about how the corn is growing spark a series of questions and ideas for investigations related to what is causing this growth.*

Educators, principals, and developers can [review the full unit](#) before they [dive deeper into the PRP's feedback](#) to gain a sense of the material's purpose, strengths, and areas that would benefit from revisions. [Learn more](#) about examples of quality NGSS design.

4 How teachers are using the solar eclipse to shed light on science

By Carolyn Jones
EdSource
August 7, 2017



With the total solar eclipse coinciding with the start of school for thousands of students, teachers around the state of California will be using the rare solar spectacle to ignite students' interest in science, showing them first-hand evidence that the earth rotates around the sun, the moon spins around the earth, and all three of them are undeniably round. [Read more.](#)

5 Featured Standards

This issue of NGSS Now features an example of how certain PEs* could be bundled in order to develop an instructional unit that engages students in science phenomena.

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.

MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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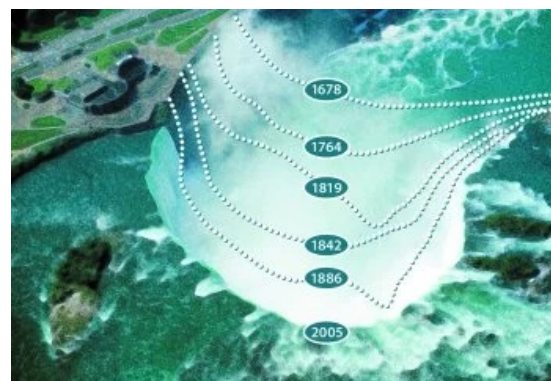
For a more in-depth look at these NGSS PEs and to search for others, read [this](#).

Need more context? See where these ideas are introduced in [A Framework for K-12 Science Education](#) (pages [125](#), [179](#), and [182](#)).



6 Science Phenomenon

Every year, the edge of this Niagara Falls waterfall moves back further and further.



Note: Lines in image indicate where the edge of the waterfall was positioned during the labeled year.

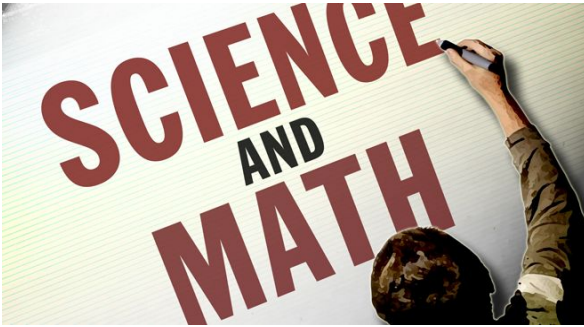
Below are some high-level lines of student inquiry that could help students facilitate their understanding of DCIs related to the featured science phenomenon:

- What happens when the water flows over and exerts a force on the rock from which the water falls? How might the force of the water affect the rock directly under the waterfall?
- Where does the kinetic energy of the water go when the water touches the earth (both where it lands and along the way)? Does the energy transfer to anything else?
- In what ways does the waterfall change the landscape? After weathering and changes to the rock occurs, where do all the sediments and other pieces of rock go?

7

Op-Ed: Parents, encourage students to study advanced math and science

By Paul Cottle
Tallahassee Democrat
July 19, 2017



Your daughter or son is not well prepared for a college major in a STEM or health field unless she or he has taken chemistry, physics and a math course called "precalculus" in high school. Taking a calculus course in high school is even better. Recent research has shown that parents play an important role in determining whether their children take the challenging math and science courses necessary to prepare for college majors in STEM and health fields.

In other words, your encouragement may be the critical factor that opens a world of opportunity for your children. [Read more.](#)

8

Mae Jemison, first woman of color in space, discusses STEM gap

By Dahlia Bazzazz
SeattleTimes
June 21, 2017

In September, Dr. Mae Jemison will celebrate the 25th anniversary of her journey into space. Her voyage marked the first time an African-American woman left the earth's atmosphere. In light of her science literacy and education work, she created an international space camp for teens shortly after leaving NASA in 1994, and advocates for Bayer's Making Science Make Sense program.



Don't let anyone rob you of your imagination, your creativity, or your curiosity. It's your place in the world; it's your life. Go on and do all you can with it, and make it the life you want to live.

— Mae Jemison —

AZ QUOTES

During a June conference in Seattle, the SeattleTimes asked Dr. Jemison to reflect on her passion for expanding opportunities in STEM for women and people of color. [Read the interview here.](#)

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Join #NGSSChat

#NGSSChat is an online forum that is hosted on the 1st and 3rd Thursdays each month to learn and share around the Next Generation Science Standards.

#NGSSChat provides educators with access to on-going professional growth and learning support from various NGSS experts, peers, and scientists who have rich and diverse backgrounds.

[Learn more about #NGSSChat.](#) The discussions and interactions are highly valuable for teachers and school or district administrators who are on the front lines of NGSS implementation. [Click here to get a downloadable flier](#) about #NGSSChat to hang in your classroom or school building!

