

Taking Stock of Science Standards Implementation

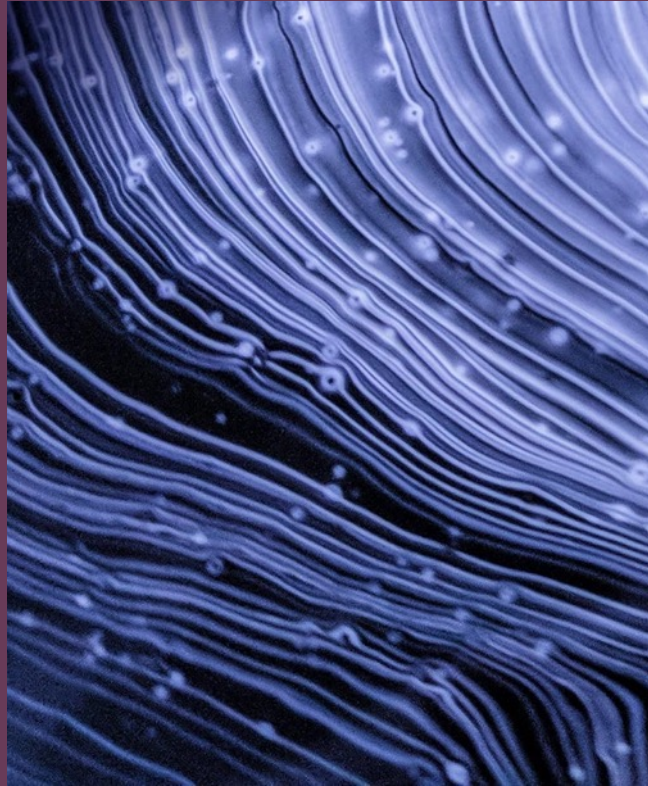
Planning for Progress

Sponsor: Bill & Melinda Gates Foundation

APRIL 26-27, 2022

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National Academies Policies and Procedures for Participation



Norms for Participation

- Embrace diversity
 - Differences in opinion are welcomed
 - Be open, listen respectfully
- Strive to promote an inclusive environment where everyone feels welcomed, valued, respected, and supported
 - Be constructive in your comments
 - Remember, bullying behavior will not be tolerated

Reminder: Policy on Preventing Discrimination, Harassment, and Bullying

- Maintain a work environment free of harassment and intimidation
- Shared responsibility not to commit harassing or discriminatory acts, not to tolerate or ignore those of others, and to avoid knowingly placing others in situations where they may be harassed
- Compliance required in all settings at the National Academies in which work is performed
- Report any incident of harassment, discrimination, or bullying to NASEM staff

Committee Members and Staff



Maya M. Garcia -
Chair



Aneesha Badrinarayan



James Blake



Ravit Duncan



Jessica Henderson-
Rockette



Victor Sampson



Sam Shaw



Tricia Shelton



Heidi Schweingruber



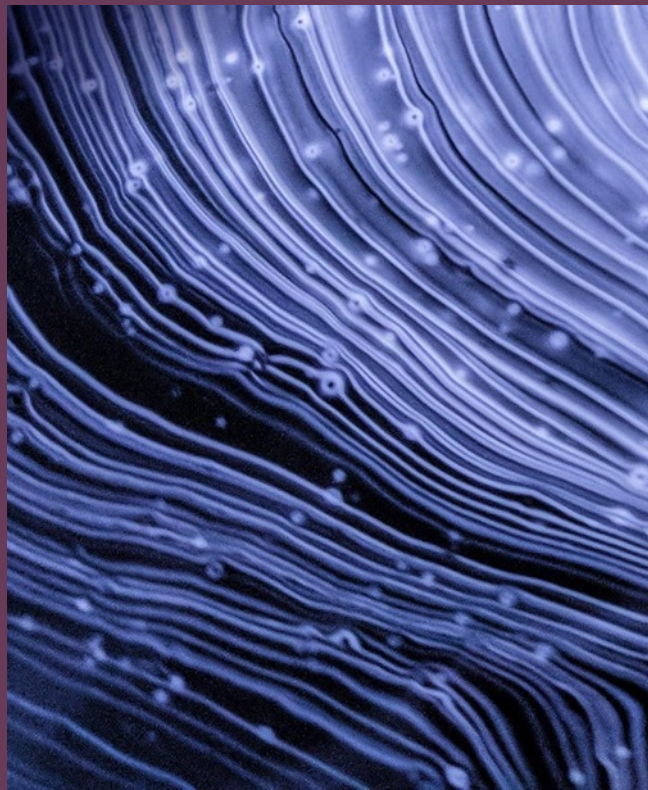
Amy Stephens - RSO



Lauren Ryan

APRIL 26-27, 2022

Orientation to the Event



Stock Take Design Elements

Make Equity a
Priority

Attend to
Coherence

Student Learning
Experiences

Professional Learning

Curriculum

Assessment

Infrastructure

Where We Have Been

Listening
Sessions

Review of Consensus
Studies, Proceedings,
and Recommendations

October Virtual
Meeting

December
Virtual Meeting

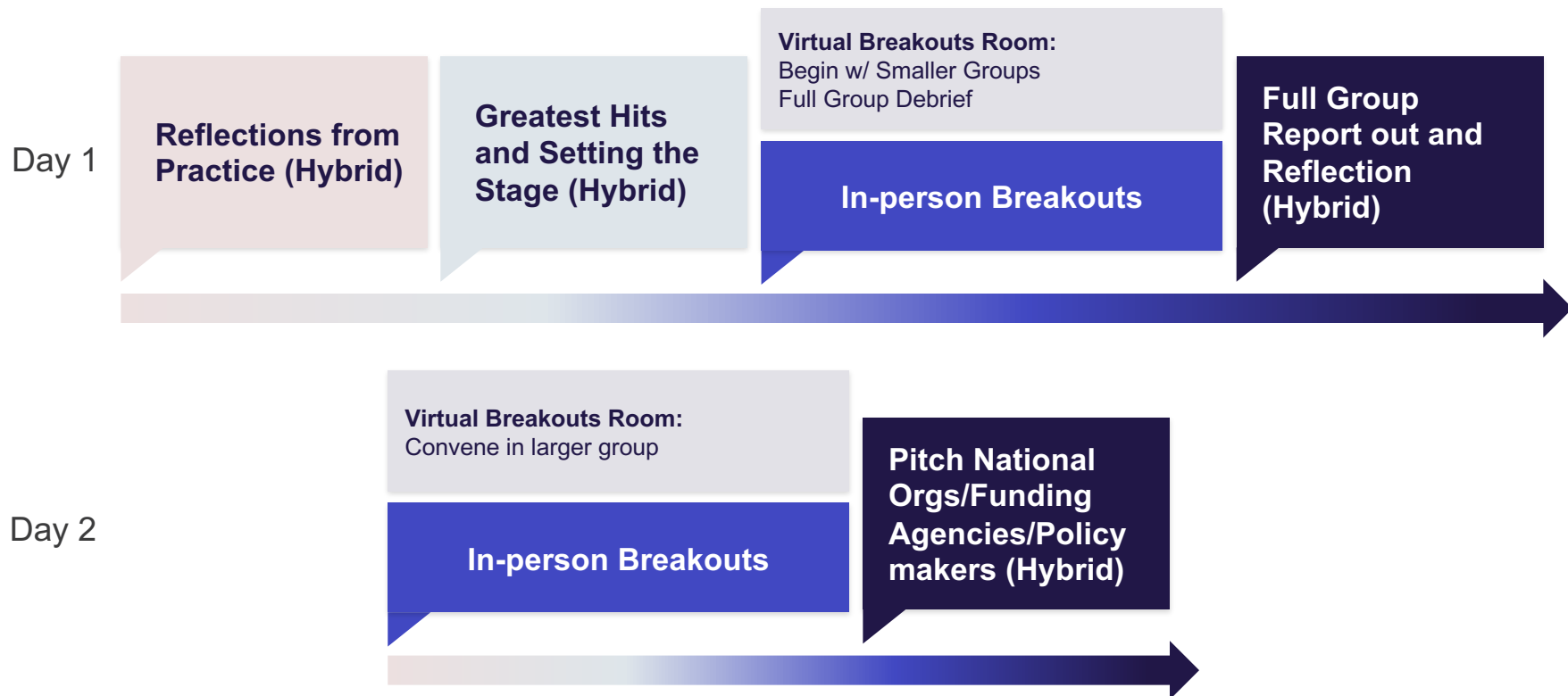
Commissioned
Papers

Coffee Talks

Coordinating Next Steps

- What **considerations and conditions** should we be holding as community planning next steps?
- Whose interests are being served? How do we plan for **equitable, inclusive, and just** outcomes?
- What does **success** look like for school? A community? The larger science education community? Do we have common definitions of success?
- What is **most urgent**? What needs to be implemented for long term outcomes? Is there anything we should stop doing?

Agenda Preview



Norms for Engagement

AUDIO



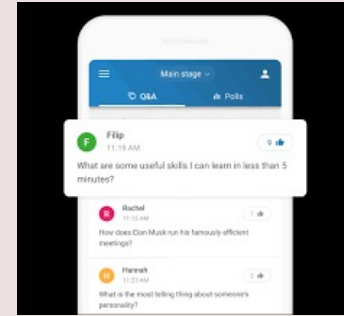
Ensure you are muted unless speaking.

CHAT



We encourage active engagement in the chat.

SLIDO



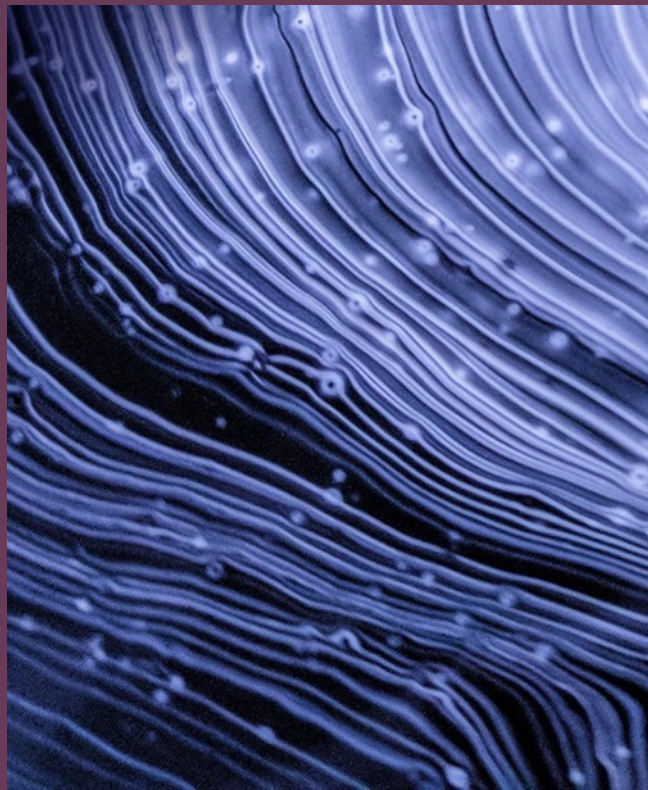
Interactive polls. Q&A questions.

The event will be using the hashtag
#scistandards on twitter, so we encourage
you to follow, join, and stay engaged in the
conversation.



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Reflections from Practice

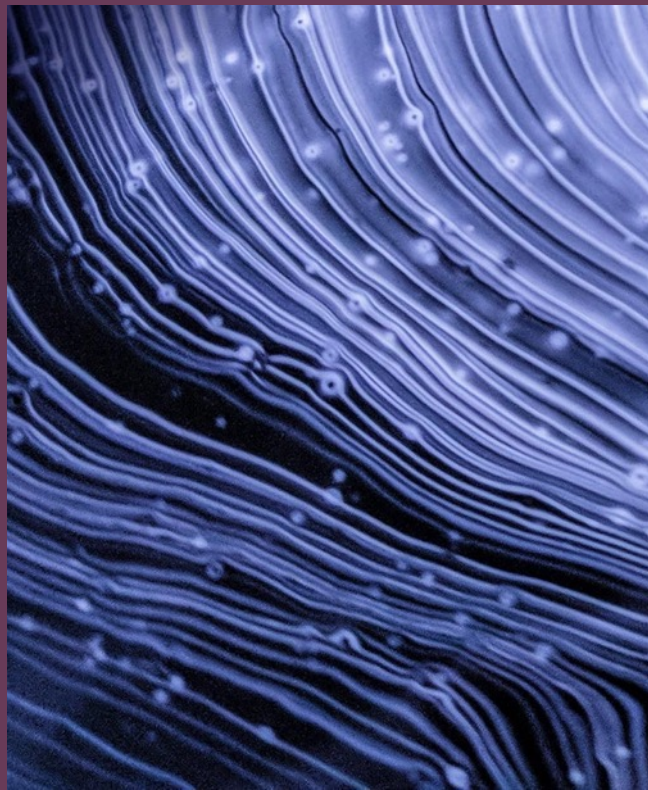


Autumn Rivera

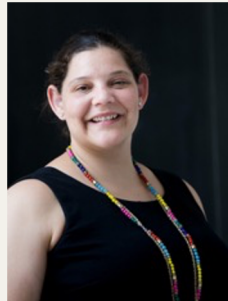


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Greatest Hits and Setting the Stage



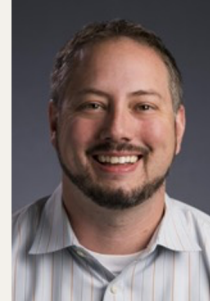
Planning Committee Reflection



Maya M. Garcia



Jessica Henderson-
Rockette



Victor Sampson

Greatest Hits



Visionary Panel



Tia Madkins



Stefanie Marshall



Elizabeth Mulkerrin



Tiffany Neill



Brian Reiser

Visionary Panel



Tia Madkins

2032: What will it take?

Leading for equitable science with urgency and responsibility for all of **our** kids

Dr. Stefanie L. Marshall



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



“[W]e are the last generation that can prevent irreparable damage to our planet”

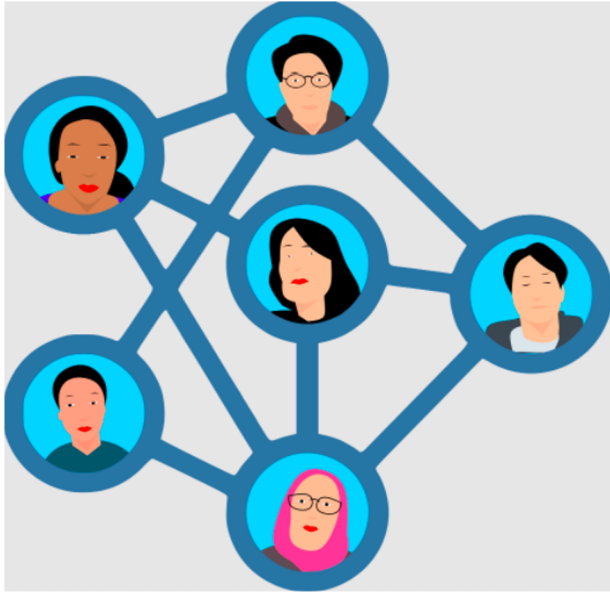
- Maria Fernanda Espinosa Garces

Ecuadorian politician and diplomat and former President of the General Assembly of the United Nations

Principals and Science Instructional Leadership

- Principal experience in science is minimal, which impacts their support in classrooms (Winn, 2016; Youngs, 2007)
- Effective science instructional leaders: encourage collaboration, align the curriculum, implement practices that support teacher strengths, and develop professional development (Casey, Dunlap, Brown, & Davison, 2012)

2032



- As ***critically conscious science leaders***, WE recognize that ***our*** science decision-making will impact the relationships students have with science and their responsibility to ecological health.
- ***Critically conscious science leaders*** make decisions that demonstrate responsibility to one another and to society
- There are ***science infrastructures connected to communities*** for science education to support all students receiving quality science learning opportunities both in schools and in communities.

How do we get there?

Community- Centered Science Infrastructures

- An *Infrastructure* consists of the ***relationships*** that require organized practices that are appropriate for policy adoption and successful implementation.
 - One person's infrastructure could serve as another's difficulty if their needs are not directly considered in the design of the system. (Star, 1999)
 - **Challenges:** funding (sources), limited personnel, science leadership training, lack of critical consciousness,

Critical Consciousness

- The ability to recognize and analyze systems of inequality and the commitment to take action against these systems (Freire, 2000)
- Racial critical consciousness has been defined as the capacity to recognize and address racialized events or experiences (McDonough, 2009).





Thank you

@DrStefanieLMarshall
slmarsh@umn.edu

Visionary Panel



Elizabeth Mulkerrin

What Do We Hope to See in 2032?

The practice of teaching has shifted from the passing on of things already known to knowing through curiosity and scientific thinking

Instead of just knowing things, students know where to find things and how to decide whether the information they've found is good

Workforce is more reflective of the students in our classrooms

Students are learning from each other more than from the teachers

It is common practice that students are learning science through connections to their cultures and communities

More science in elementary school...good science not just flashy hands-on or mad science type of stuff

How Do We Get There in 2032?

INFORMAL

More flexibility for the school day to continue outside of current school hours and policies and funding to address inequities

EDUCATORS

Incentivize policies and funding to provide 2 -3 year induction programs that lead to industry credentials

UNIVERSITIES

Invest in partnerships for early college start programs and advocate for federal and state policies for full tuition waivers

LEADERS

Invest in Alliances and provide opportunities for state and district leaders to analyze systems of science education and opportunity gaps

How Do We Get There in 2032?

Keep with the vision of the Framework longer than 10-15 years. This type of teaching, if done in a way true to the standards and Framework, can benefit so many students. Let's not abandon it like is common in education reform efforts.

Keep in mind that professionally it's a much harder job with a much higher reward so teachers need continued support to facilitate it.

BRIAN J. REISER
Northwestern University

Reconceptualize “Adoption” as A Community Learning Together through Partnerships and Codesign

In 2032...

- Students see their science work as addressing questions and problems they care about.
- Teachers’ see their role as supporting students’ sensemaking, through science, about questions and problems in their world.

How do we get there?

Teachers of science K-12 are dedicated to ongoing cycles of codesign, enactment, and evaluation/redesign working toward the Framework 5D vision.

Science
Engineering
ACADEMIES Medicine

- Districts see implementation not as adoption of standards, curriculum, and assessments & “learning to use” those things, but as a commitment to learning and incremental improvement.
- Districts and schools support phased implementation.
- Investments supporting teacher learning across years.

Reconceptualize “Adoption” as A Community Learning Together through Partnerships and Codesign

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- Teachers’ see their role as supporting students’ sensemaking, through science, about questions and problems in their world.

How do we get there?

Codesign/enactment cycles supported by research-practice partnerships and widely available open educational resources.

- Research-practice partnerships support codesign and study of progress.
- R & D focus on developing open curriculum and professional learning materials, video libraries, datasets, phenomena, datasets, freely shared, adapted, investigated and refined.

Improve the Tools, But Stick With the *Framework*

In 2032...

- We continue to refine tools of implementation (Framework-based standards, curriculum, and assessments) in light of the Framework vision.

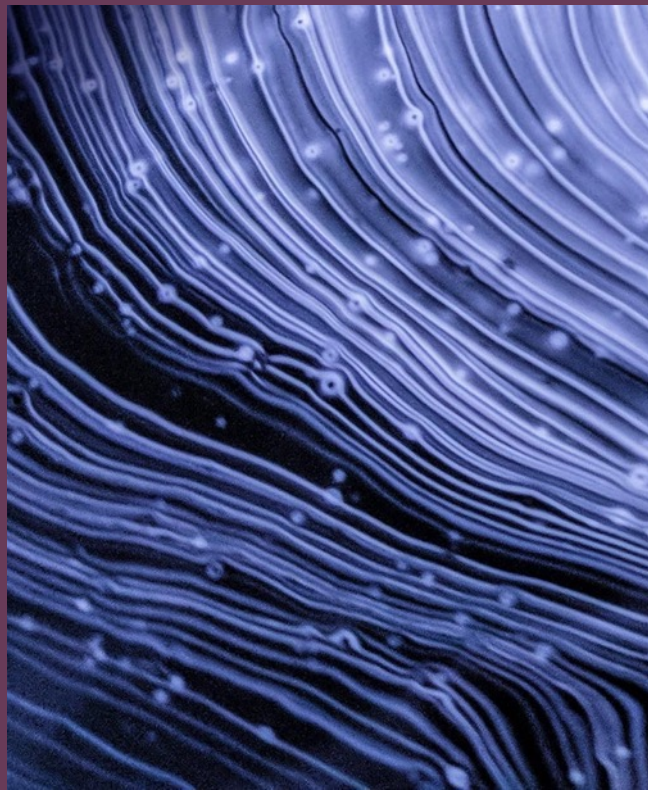
How do we get there?

We keep our eyes on the goals and don't assume we have the right tools yet

- We document the steps forward in the vision through new standards, curricula, and assessments as well as ways these tools fall short.
- We continue to evaluate the actual effects of these tools against the Framework vision.
- We ask the hard questions and are open to what we find – *How successful in NGSS in shifting from breadth to depth? Can teachers teach all the NGSS PEs in their year?*

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Breakout Session Overview



Virtual Breakout Session

Check your email for the link that you have been assigned.

When you enter the virtual room, you will receive instructions from your facilitator on next steps and timing.

In-person Breakout Session

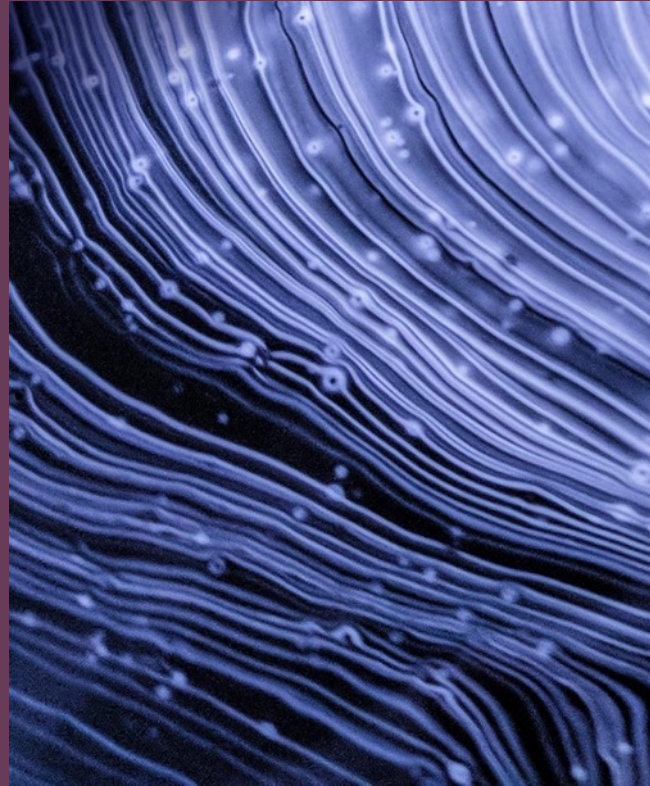
- Group 1: **Leadership Systems** – Room 250
- Group 2: **Teacher Workforce** – Board Room
- Group 3: **District and State Policy** – Members' Room
- Group 4: **Partnerships and Alliances** – Lecture Room
- Group 5: **Curriculum and Instruction** – Room 125

Planning and Strategizing are currently
taking place.

We will return to the full group at
2:30 pm EDT.

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Report Outs



Report Out Structure

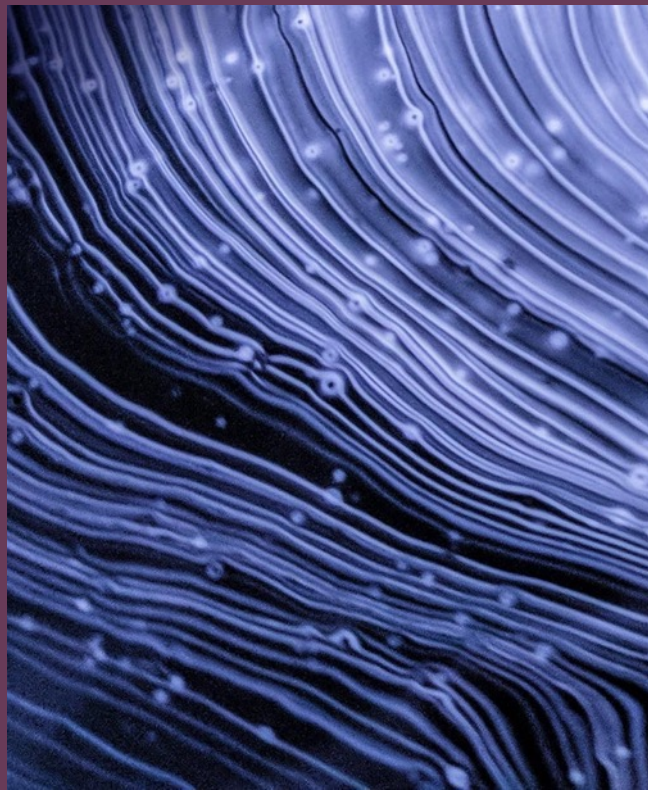
Each group gets 5 min. Start with Group 1, alternating virtual then in-person. Pause for clarifying questions after group pair shares. Q&A/reflection at end.

- Group 1 – Leadership Systems
- Group 2 – Teacher Workforce
- Group 3 – District and State Policy
- Group 4 – Partnerships and Alliances
- Group 5 – Curriculum and Instruction

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Reminder for Day 2

Start the day in your breakout group!



Virtual Breakout Session

Check your email for the link that you have been assigned.

When you enter the virtual room, you will receive instructions from your facilitator on next steps and timing.

In-person Breakout Session

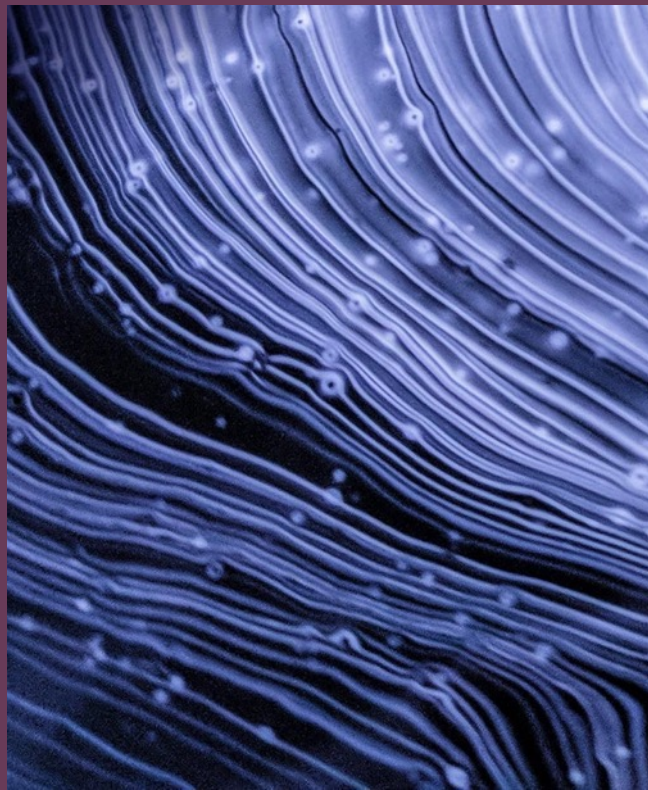
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- Group 2: **Teacher Workforce** – Board Room
- Group 3: **District and State Policy** – Members' Room
- Group 4: **Partnerships and Alliances** – Lecture Room
- Group 5: **Curriculum and Instruction** – Room 125

Creativity is currently taking place.

We will return to the full group at
11:00 am EDT.

APRIL 26-27, 2022

Report Outs



Report Out Structure

Each group gets 5 min. Start with Group 1, alternating virtual then in-person. Pause for clarifying questions after group pair shares. Q&A/reflection at end.

- Group 1 – Leadership Systems
- Group 2 – Teacher Workforce
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Thank you for your continued participation!!

Thank you for your engagement these last 6 months as we take stock of science standards implementation and plan a path forward!

<https://www.nationalacademies.org/our-work/taking-stock-of-ngss-implementation-a-summit>