

Enhancing Science and Engineering in Prekindergarten through Fifth Grade: CSSS/NSELA Sponsored Leadership Webinar (CHAT)

November 30, 2021

12:00 pm – 1:00 pm

00:50:21 Jose Portillo (NASEM): Attendees- If you have any technical zoom issues during the event, please contact Zoom technical support at 1-888-799-9666, and choose option 2.

00:51:01 Elizabeth (Liz) Petersen-MySci: Hello from St. Louis, MO.

00:51:14 Cathi Cox-Boniol: Good morning from Ruston, Louisiana!

00:51:28 Dana Ganaden: Hello from Richmond, VA

00:51:37 Carolyn Higgins: Hello from Providence, Rhode Island

00:51:44 Tiffany Neill: Welcome everyone! So excited to have you join us today!

00:51:45 Linda Cook: Greetings from Texas!

00:51:46 Angela Marie Lyle: Hello from Ann Arbor, MI

00:51:52 Georgia Sandgren: Hi from Fairbanks, AK ☺

00:51:53 Beth Pesnell: Hello from “the little apple” (Manhattan, KS)

00:51:59 Michael Fierle: Hello from Pittsburgh, PA!

00:52:08 Elizabeth (Betsy) Davis: Great to see everyone -- thanks for being here!

00:52:11 Rachael Manzer - Winchester Public Schools: Hello from Winchester, CT!

00:52:20 Kathy Ernst: Hello from Union, NJ

00:52:28 Gavin Quinn: Hello from New Jersey

00:52:38 Chad - Einstein Project: Hello from Green Bay, WI

00:52:38 Erica Beck Spencer: Hello from Portland, ME! It’s chilly up here!

00:52:49 Elizabeth (Betsy) Davis: The report is available here:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

00:52:55 Alissa Lange: Hi from Jonesborough, TN.

00:52:59 Mike Heinz: Greetings to my CSSS and NSELA friends!

00:53:00 Pam Kraus: Good morning from Salina, Kansas!

00:53:01 Erica Beck Spencer: Hello from Portland, ME! A chilly morning here.

00:53:04 Elizabeth (Betsy) Davis: The report is available here:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

00:53:13 Elizabeth (Betsy) Davis: #BrillianceAndStrengths

00:53:18 Dr. Heidi Lehmann: Hi everyone---greetings from Bucktown, PA (Philadelphia area)

00:53:23 Amy Chase (she/her): Good morning from Albuquerque, NM!

00:53:29 Arthur Camins: Good morning/afternoon everyone

00:53:33 Patti Curtis: Patti Curtis, US Dept. of ED

00:53:37 Will Tad Johnston: Hi, hello from DC

00:53:41 Shateeka Dallas: Hello from Baltimore md

00:53:43 Lori Schoening: Good morning from Alaska!

00:53:47 Ted Willard: Hello from Rockville Maryland. Always love spending time with NSELA and CSSS folks.

00:53:48 Penelope Lillianna LillieMay GarciaRoss: Good Morning Lillianna Garcia from Washington DC Rebuilding Independence My Style

00:53:49 Amber McCulloch, PSED (she/her): Good morning from Seattle, WA.

00:53:50 Jim Kearney: Hello from outside Philadelphia, PA.

00:53:59 Elisa Slee: Hello from CA

00:54:08 Judi Hunter: Hello from Calgary Alberta

00:54:10 Rachel Cox: Hello from Knoxville, TN

00:54:13 ALEXIS *: Good day, from Sunny Florida!☀️

00:54:33 Mina Jo Blazy: Good morning from Sunny Southern California

00:54:39 Carla Stough Huffman: hello from cold and grey Rochester, NY

00:54:45 Kristin Gagnier (she, her): Hello from Baltimore, MD!

00:54:58 Suzy Loper: Good morning from Berkeley, CA!

00:55:00 Patrice Woods: Good morning, from Portland, OR

00:55:35 Julie Calkins: Hello from Cheyenne, Wyoming!

00:58:37 Elizabeth (Betsy) Davis: The report is available here:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

00:59:19 Mike Heinz: It's Tiffany Neill!! Do you think that she will send me her autograph?

01:00:03 Ted Willard: She might ask for your autograph Mike. Then again, she might not. :)

01:02:28 Elizabeth (Betsy) Davis: The slides will be available after the session!

01:02:42 Cathi Cox-Boniol: Great!

01:02:54 Elisa Slee: Thank you1

01:03:04 Patti Curtis: thank you - loves these 4 approaches!

01:03:36 Mina Jo Blazy: Thank you for the slide deck

01:04:27 Cathi Cox-Boniol: To help make more informed decisions when planning

01:04:42 Penelope Lillianna LillieMay GarciaRoss: I have will continue to implement the 4 in all my classrooms

01:04:43 Patti Curtis: opens minds to alternate interventions

01:04:54 Elizabeth (Liz) Petersen-MySci: I will go through our K-8 science curriculum to look at how we can infuse the report into the curriculum.

01:04:56 Corinne Marko Murawski: Just having equity and justice in the forefront helps keep our focus there as we move forward in PK-5 science

01:04:56 Traci Walkup: It will helpful as we develop and revise curriculum documents. Also, share this information during elementary science professional development for teachers, administrators and stakeholders.

01:05:00 Suzy Loper: (How might you use these approaches?) As curriculum developers, consider how to improve our materials to make them stronger levers for equity and justice.

01:05:00 Shateeka Dallas: daily lessons

01:05:01 Patrice Woods: This is right in alignment with my current role and the focus of our district which is Racial Equity and Social Justice. This will help guide my thinking.

01:05:02 Mina Jo Blazy: Representation of Girls in curriculum. Giving girls access to STEM before school, Pre-school and through school from a collaborative perspective. Working with educators to mitigate implicit and explicit bias for girls in STEM

01:05:04 Liz Hermoso: To write more thoughtful curriculum

01:05:06 Chad - Einstein Project: As a PD & curriculum support organization we need to help bring the access to the ideas from the report and the high quality resources to school leaders and educators.

01:05:18 Beth Pesnell: Supporting, empowering, and preparing preservice elementary teachers as they enter the classroom

01:05:23 Missy Holzer: They can be incorporated into teacher PD, and in the design of curricula.

01:05:24 Heather Johnston: Will use the information when engaging with principles about the importance of science in elementary.

01:05:36 Little Mountain Media LLC Little Mountain Media LLC: Discussions & planning with ECE teachers and administrators

01:05:46 Janice Koch: Examine early science curriculum through the lens of individual contexts- whose experiences are validated? Omitted?

01:05:47 Cathi Cox-Boniol: WOW!

01:05:55 Will Tad Johnston: Give examples of activities, opportunities that fit an expanded definition of what science is

01:05:58 Linda Cook: I love the idea of connecting science and engineering as a part of social justice movements through citizen science projects where students collect data and compare with data collected globally to indicate significance of issues to be addressed.

01:06:01 Dr. Heidi Lehmann: The selection of materials and the creation of assignments/tasks are crucial for engagement of all learning.

01:06:01 Dana Ganaden: Utilize research to support decisions for classroom environments and lesson planning

01:06:06 Tracy Jarrett: Honestly, just to help push the importance of science in Elementary!

01:06:43 Mina Jo Blazy: Yes access to consumables and other tangible items K-12

01:06:55 Jenn Brown-Whale: "What constitutes as science" - raise awareness among educators the important stepping stones to full understanding. Really underscores the "brilliance of

children” in the process of sensemaking. Give educators permission to pick up on, honor, and utilize those nuggets of growing understanding instead of “correct” them

01:07:05 Georgia Sandgren: Increasing the opportunity and access to science and engineering learning

01:07:08 Mia Dubosarsky: It is good to consider the 4 approaches separately, and consider action steps under each one, rather than lump them all together under a heading of 'S&E equity'.

01:07:20 terrycontant: Use them to develop a rubric to analyze current practice in classrooms/schools.

01:07:23 Mary Weller -MSDE-: We think a lot about college and career readiness, and it is easy to slip into a myopic focus on high school. This report can help us emphasize the criticality of early and consistent access to quality science experiences for ALL students beginning at young ages.

01:07:34 Tracy Jarrett: I support districts that spend over 3 hours a day on ELA and 2 hours of math.

01:07:44 Little Mountain Media LLC Little Mountain Media LLC: Was the \$ comparison extrapolated from the 2018 NSSME? I didn't recall reading that; rather reading amounts of time but not dollars.

01:08:08 Jaime Stuart: This data is critical! Thank you!

01:08:22 Elizabeth (Betsy) Davis: @Little Mountain Media -- yes most of these data about resources & time were from the various NSSME+ reports.

01:08:51 Dana Ganaden: Use the data and resources to promote the importance of STEM in cross-curriculum activities

01:09:05 Rae McEntyre: Did anyone else notice that the time spent for science was beginning to increase until NCLB when it dropped?

01:09:14 Patti Curtis: research center for young students with disabilities in STEM
<https://stemie.fpg.unc.edu/>

01:10:04 Mia Dubosarsky: Thank you for making a specific recommendation about not pulling students out of S&E!

01:10:50 Little Mountain Media LLC Little Mountain Media LLC: @Betsy—Thank you

01:10:59 Mina Jo Blazy: I am so happy that I get to be in this space...

01:11:56 Cathi Cox-Boniol: It feels incredible to hear someone actually verbalize what is being shared through this report . . . I wish we could put it up on billboards!

01:13:12 Mina Jo Blazy: Yes... increases self-efficacy

01:13:49 Tom Keller: What would the effect be if preservice teachers were placed with Presidential Award recipients or NBCT teachers for student teaching and/or for first years mentorships?

01:14:34 Mina Jo Blazy: @cathi I agree

01:14:49 Linda Cook: Great idea, Tom!

01:15:09 Joy Abbott | DEED: Betsy, your mic keeps getting static from something.

01:15:15 Patti Curtis: add Einstein Fellows as Mentors too

01:15:23 Arthur Camins: I'd like to hear more about what is known about "questions that matter to students."

01:15:39 Tiffany Neill: @Rae McEntrye the report actually showcases the data that supports your assertion about time for science declining slightly during the NCLB era.

01:17:14 Tiffany Neill: The full report can be downloaded for free at:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

01:17:40 Amy Heidner: My first-year mentor was teaching a 1.2 load. While good mentors are important, equally important is Making Sure that Mentors Have Time in their Schedules TO Mentor!!!

01:18:08 Amy Stephens: As you have questions for our panelists, please make sure to enter these into the Q&A box.

01:18:55 Gregory MacDougall VDOE: Knowledge-producers!

01:19:02 teresa Lampe: Tie activities and instruction to phenomena

01:19:02 Julie Boehm: LOVE the idea of engagement with community experts

01:19:06 Patti Curtis: engaging families, making challenges local, relevant

01:19:07 Talaiver: Parental involvement.

01:19:15 Elizabeth (Liz) Petersen-MySci: How do we make sure that the money that Congress is making available for preschool is able to address these findings in the report? What can we do at our state level?

01:19:16 Cathi Cox-Boniol: Children can DO science and have such amazing potential!

01:19:20 terrycontant: Importance of family involvement.

01:19:23 Tracy Jarrett: NOT pulling kids from science for support in other subjects.

01:19:24 Bekka Nolan: Connecting with family and community

01:19:24 Dana Ganaden: As leaders involving families and community will be important

01:19:28 Ted Willard: The push for Time for Science is what really feels so important to me.

01:19:31 Elisa Slee: I appreciate the equity focus

01:19:31 Julie Calkins: The time allocation science has in the regular school day. It communicates that science isn't as important as ELA and Math.

01:19:32 Arthur Camins: Justice focus; Questions that matter, formative assessment

01:19:34 Penelope Lillianna LillieMay GarciaRoss: collaboration with the children is key

01:19:36 Mina Jo Blazy: Working with community partners (families, business, leaders) to increase science awareness for students. Some parents may have their own biases for example...

01:19:38 Heather Johnston: I like the call out of specific actions teachers can do.

01:19:40 Shateeka Dallas: science interactive

01:19:46 Linda Cook: I like the emphasis on identity and how important this is for efficacy.

01:19:50 Joanne Johnson: I am interested in how to engage in phenomenon based problem solving in an environment that does not support long range projects in the primary setting (ie no storage, class once every 8 days, etc.)

01:19:51 Corinne Marko Murawski: The finding that even at early grades science should be organized around investigation of phenomenon.

01:19:57 Janice Koch: hat teachers arrange S&E instruction around phenomena and design problems while seeing children as active thinkers!

01:20:03 Linda De Lucchi: No pull-out during science sessions for remediation in other subjects.

01:20:06 Missy Holzer: F&Rs that focus on conversations between administrators and teachers to ensure the teachers have support to include science and engineering in their daily lesson plans.

01:20:07 Amy Reese, Howard County: @Ted - agreed! TIME is always a concern...I appreciate the emphasis put on it in this report

01:20:12 Mina Jo Blazy: I am an advocate for integration between content/subject.

01:20:18 Jaime Stuart: Are there recommendations for how all of these work in an asynchronous environment?

01:20:26 Ray Bonnette: Resources spent for a subject that may be 1/2 time comparatively could increase to be scaled with those offering full time.

01:20:29 Chad - Einstein Project: The recent recommendation about community involvement is so important. It truly takes a village...kids need opportunities for high quality experiences in informal learning environments as well.

01:20:36 Michael Fierle: Children can learn and understand big conceptual ideas when instruction is anchored in design problems and phenomena and provides support for children to iteratively refine that understanding

01:20:39 Liz Hermoso: I always knew that not enough time and resources were devoted to elementary science, and it's good to see that this is confirmed in the data. I also feel that the standards gap in PreSchool is ripe for science inquiry! Children are natural scientists.

01:22:01 Carla Stough Huffman: Would love to see "teacher" expanded to "educator", as those of us in Out-of-School Time provide engaging enrichment that often is the real-life application of classroom learning.

01:23:22 Patti Curtis: hear hear OST educators

01:23:27 Cathi Cox-Boniol: Important point, especially when considering the role of the whole community

01:23:33 Amy Stephens: @Carla — that is a great point and in many times we do use 'educator' in this broader term that encapsulates more spaces. We sometimes also refer to teachers in a broader context because for us educators also included some of our leaders

01:23:52 Little Mountain Media LLC Little Mountain Media LLC: I'm curious about PreK & K specifically in regards to connections between disciplines. In particular, the need these students need some foundational knowledge in order to increase problem-solving. As well, some curricular concepts are abstract. It seems the Report may be addressing intermediate grades with this statement. Is that accurate?

01:24:22 Mia Dubosarsky: For science & engineering preschool curriculum please see IES-funded Seeds of STEM: <https://www.seedsofstem.org/>

01:24:57 Cathi Cox-Boniol: WOO HOO!!

01:25:06 Molly Talbot: Yay LA!

01:25:37 Elizabeth (Liz) Petersen-MySci: Congrats to Louisiana!!

01:25:41 Arthur Camins: Glad to hear recommendation that the entire burden of instructional materials development should not rest on teachers.

01:26:30 Kathy Renfrew: Coherence so important

01:26:41 Cathi Cox-Boniol: I've been a part of this process and it's really collaborative while allowing a deep dive into the curriculum and resources

01:28:01 Patti Curtis: you can use those Title IVA funds for materials & PD as well as ARP funds!

01:28:30 Daniel Alcazar-Roman: drive

01:28:32 Mina Jo Blazy: supporting children's cultural and linguistic backgrounds must happen...

01:29:00 Eric Cromwell: Is there research on why recruiting teachers of color is so difficult?

01:29:25 Bekka Nolan: EiE (if anyone is a fan of them) also has a Preschool curriculum <https://eie.org/stem-curricula/engineering-grades-prek-8/wee-engineer>
Not free :(but their family engineering is: <https://eie.org/families-and-stem-events>

01:29:30 Amy Stephens: @Eric — there is a previous report on the teacher workforce that examined some of these issues

01:30:02 Cathi Cox-Boniol: That's a good question. You could check with the "Call Me Mister" program that focuses on recruiting men of color into education. We have that in our parish and throughout the state.

01:30:19 Arthur Camins: Is there any research to support the use of high quality instructional materials as a key feature of pre-service preparation?

01:30:21 Amy Stephens: @Eric <https://www.nap.edu/catalog/25603/changing-expectations-for-the-k-12-teacher-workforce-policies-preservice>

01:30:59 Chad - Einstein Project: Working with districts using NextGen TIME has been truly transformational. How do we help more districts recognize the value in taking the time to use such a robust and educative process?

01:31:00 Eric Cromwell: Thank you @Amy!

01:31:21 Kathy: Did the report acknowledge curricular materials coming from entities other than "publishers"? Some of the OER developers are producing quality curricula.

01:31:58 Mina Jo Blazy: The principal needs to support Science.

01:32:25 Elizabeth (Liz) Petersen-MySci: There needs to be a report that teaches administrators how to be supportive of science education.

01:32:40 Tom Peters: <https://www.clemson.edu/education/programs/programs/call-me-mister.html>

01:33:38 Patti Curtis: Thanks @Tom Peterson

01:35:07 CHERYL BEYER: Building a science leadership team with admin and teachers to advance science instruction.

01:35:07 Bekka Nolan: recommendations for using authentic and engaging phenomena

01:35:09 Elizabeth (Liz) Petersen-MySci: My work at Washington University with curriculum is right on the spot with the report!

01:35:11 Michael Fierle: This all aligns with what research tells us about how people learn....

01:35:18 Julie Calkins: Leadership and resources are the key to quality science instruction.

01:35:21 teresa Lampe: I am a curriculum coordinator and struggle with teachers understanding how important science is

01:35:24 Suzy Loper: Helping teachers authentically integrate literacy with science is essential

01:35:36 Kathy Renfrew: Advocate for elementary science instruction to anyone who might listen!

01:35:42 Corinne Marko Murawski: Starting to think about systems and leaders as lynchpins for improving science instruction

01:35:43 Penelope Lillianna LillieMay GarciaRoss: I am happy to know I am heading in the right directions in my classrooms!

01:35:56 Mina Jo Blazy: Because I was a science educator I was able to support teachers when I was a principal. Science was fully infused and integrated in the classroom. Teachers and families were able to see the impact. The results fueled their want for more learning.

01:36:16 Tracy Jarrett: HQIM always a recommendation and to make time for elementary science

01:36:17 Shateeka Dallas: implement science making it interesting for students

01:36:23 Linda Cook: Several years ago we trained all elementary educators, administrators, librarians, and instructional coaches in "Sally Ride Science", which emphasized the importance of STEM education for all and introduced all to STEM careers and STEM professionals across demographic groups.

01:36:47 Cathi Cox-Boniol: I'm so pleased with the validation the information provides. I've been inspired to create a mini summit here in North Louisiana to focus on this important topic and get our STEM Ecosystem focused on the need for equitable STEM instruction in the early grades, especially in our marginalized communities throughout the delta region.

01:37:15 Mina Jo Blazy: Now at a district level I am in-between a rock and a hard place. (literacy and concepts and procedures in math only) I am pushing back...😬

01:37:20 Linda Cook: Mina - have you shared your perspective and your approach with other administrators?

01:37:22 Janice Koch: Equity and justice approaches are the most significant emphases in this report- reminding professional in S&E education that S&E instruction is not neutral....thanks for that!

01:37:23 Carla Stough Huffman: as a member of a regional STEM Hub, I use reports like this to show them that starting their focus at high school is too late, that OST providers are part of the process, etc. I provide trainings to OST staff to help them integrate high-quality science and engineering opportunities into their programs

01:37:54 Mina Jo Blazy: @Carla I am so glad you point this out.

01:38:07 Amy Heidner: I am very active in Science & Engineering Fairs. Successful projects are inherently multidisciplinary: Persuasive speaking, clear writing, visual presentation, aka a bit of art(!), presenting in ways appropriate to their audiences, statistical analysis,...

01:39:17 terrycontant: Having worked in the role of a science specialist, I strongly agree with the list that describes things that should be in place to ensure that science specialists effectively enhance science and engineering teaching and learning in a school or district.

01:40:22 Linda Cook: Engaging school administrators in trainings, such as Argument-Driven Inquiry, can increase understanding of the types of thinking, doing, and discourse that we want for our students.

01:40:36 Chelsea Cochrane: A lot of parallels to my work at the San Diego County Office of Education. If you are looking for resources to support the "how" at the classroom level, I recommend checking out It's Still Debatable! Using Socioscientific Issues to Develop Scientific Literacy, K–5 from NSTA Press. "It's Still Debatable! encourages scientific literacy by showing you how to teach the content and thinking skills K–5 students need to explore real-world questions" by integrating science and ELA. You could then bring in the community, as the report recommends, to discuss what socio-scientific issues are impacting your community and how those issues can be used to drive classroom instruction.

01:41:19 Elizabeth (Betsy) Davis: The report is available here:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

01:41:31 Traci Walkup: This has been great!

01:41:35 Linda Cook: My teachers loved reading Ready, Set, Science as a tool for forming our vision for science education in our district.

01:41:45 Elizabeth (Betsy) Davis: That's the Brilliance & Strengths report -- practitioner volume coming in Fall 2022

01:42:02 Ted Willard: +1000 on the practitioner volume! So exciting.

01:42:42 Janelle Johnson: *Promising practices :)

01:43:05 Linda Cook: I love these recommendations, @Chelsea!

01:43:54 Elizabeth (Betsy) Davis: chapter 2 has the figure that Tiffany's referring to!

01:43:57 Discovery Center: There is another great practitioner volume based on Learning in Informal Environments: People Places Pursuits called "Surrounded by science: learning science in informal environments" that may be useful here as well.

01:44:10 Mia Dubosarsky: Thank you, I will look through the report for these examples!

01:44:34 CHERYL BEYER: Edreports uses a high quality, in-depth rubric that can be applied to resources.

01:45:19 terrycontant: Based on this presentation, I'm anxious to read and have professional discussions about the publication.

01:45:27 Janelle Johnson: NCLB also reduced programs like bilingual education and Indigenous language revitalization efforts

01:45:45 Elizabeth (Betsy) Davis: The hashtag we're using for the report is #BrillianceAndStrenghts

01:45:55 Elizabeth (Betsy) Davis: WHOA misspelled that -- #BrillianceAndStrengths

01:46:39 terrycontant: Great question about anti-science parents.

01:47:17 Elisa Slee: Thanks, @Betsy

01:47:21 Janelle Johnson: We have to approach families with a strengths based approach if we hope to engage them

01:47:33 Mina Jo Blazy: That is a great question regarding the influence of parents in STEM. I addressed some of this in my lit review. I don't have it with me. It is published.

01:47:52 Alissa Lange: So important! How we talk with pre-service teachers about this in certain regions especially.

01:48:07 Cathi Cox-Boniol: But if the school isn't putting an emphasis on science then parents could easily follow that lead. They may not know any better.

01:48:21 terrycontant: Are there any opportunities to become involved in the development of the next publication? Committees? Reviewing?

01:48:25 Michael Fierle: use children's literacy to draw parents in and intentionally "sneak" in the science/engineering activity

01:48:27 Joy Abbott | DEED: Mina, where I can find that publication?

01:49:17 Cathi Cox-Boniol: I have a 12:00 call so have to jump off. Thank you SO much for this fabulous presentation!

01:49:19 ALEXIS *: Hello, often times it isn't the anti-science, for a majority of parents and teachers in underserved communities, it's more of no resources/materials/supplies etc.

01:50:08 Janelle Johnson: +1 Alexis

01:50:19 Alissa Lange: Me too. Great stuff! Thanks all.

01:50:27 Amy Heidner: My experience has been the other direction - that parents drive the emphasis at the schools - especially the really vocal ones. That does lead to inequity.

01:50:31 Elizabeth (Liz) Petersen-MySci: Great webinar. Thank you so much!

01:50:31 Mina Jo Blazy: Thank you so much.

01:50:38 Patti Curtis: Thanks for this session. Really appreciated the LA example. Would be great to learn of other states doing same.

01:50:39 Johanna Kaiser: Thank you!

01:50:39 Kimberley Astle: Thank you!

01:50:41 Mina Jo Blazy: Will the slides be emailed?

01:50:44 Elisa Slee: This is a terrific recent resource that addresses justice-oriented pedagogies for informal science

01:50:44 Georgia Sandgren: Thank you!

01:50:48 Michael Fierle: it's a fallacy to believe that children need a set of facts and discrete knowledge before engaging in problem solving. That plays into the traditional approach of putting the problem solving last so that "tomorrow" never comes

01:50:48 Elisa Slee: <https://www.informalscience.org/news-views/justice-oriented-pedagogies-informal-science-learning>

01:50:55 Little Mountain Media LLC Little Mountain Media LLC: Thank you for addressing my PreK & K question.

01:50:58 Elizabeth (Betsy) Davis: Thank you all so much for your interest!

01:50:59 Tracy Jarrett: Thank you!

01:51:01 Elizabeth (Betsy) Davis: The report is available here:
<https://www.nap.edu/catalog/26215/science-and-engineering-in-preschool-through-elementary-grades-the-brilliance>

01:51:02 Linda Cook: Thank you for sharing your research and your recommendations for science education leaders.

01:51:05 Missy Holzer: thank you!

01:51:08 Mina Jo Blazy: Thank you @Amy

01:51:10 Mia Dubosarsky: Thank you very much!

01:51:10 Mike Heinz: Thank you Amy, Betsy and Tiffany!

01:51:11 Carolyn Higgins: Thank you and have a great day!

01:51:12 Holly Falcone: Thank you!

01:51:14 Traci Walkup: Thank you.

01:51:21 Ted Willard: Thank you so much!

01:51:21 Elisa Slee: Thank you!

01:51:21 Lisa Kiel: Thank you!

01:51:22 Erica Beck Spencer: Fantastic work! Still hopeful...

01:51:22 Rachael Manzer - Winchester Public Schools: Thank you!

01:51:24 Aubrey Lavizzo, DVM: Thank you!

01:51:24 Traci Walkup: Can you share the link to the project website?

01:51:24 Jim Kearney: Thank you! Be well.

01:51:26 Lori Schoening: Thank you!

01:51:26 Corinne Marko Murawski: thanks

01:51:26 Michael Fierle: Thank you!

01:51:27 Kathy Ernst: Thank you!

01:51:30 Nancy Wright: Thank you!

01:51:30 Jenn Brown-Whale: THANK YOU!

01:51:32 Kirsten Daehler: Thank you! So brilliant and strong!

01:51:34 Heather Johnston: Thank you!