



## April Theme of the Month Webinar Panel

### Integrating Engineering into Middle School Curriculum: Challenges, Strategies and Impact



April 13th at 4:00PM EDT



Marion Usselman (moderator), Meltem Alemdar, Nidaa Makki, Chelsea Nicolino, Isabel Huff, & Steven Huard

## Webinar Chat and Resources Mentioned During Webinar

### Resources Mentioned During Webinar

<https://www.iamascientist.info/educators> : “I Am a Scientist” offers a mix-and-match system that makes it easy to shatter stereotypes about science and scientists in your classroom.

[Designing for Rightful Presence in STEM: The Role of Making Present Practices](#), Angela Calabrese Barton & Edna Tan (2019)

Don't forget to view the Theme Resources:

- <https://stemtlnet.org/theme/April2022#resources>
- [https://multiplex.videohall.com/month\\_themes/19#resources](https://multiplex.videohall.com/month_themes/19#resources)

### Webinar Chat

Kim Descoteaux : Thank you for joining us today! This webinar panel is hosted by The STEM Teacher Leadership Network and STEM for All Multiplex (<https://stemtlnet.org> - Funded by NSF #1932761 and <https://multiplex.videohall.com> - Funded by NSF #1922641)

Laura Z : Hello! Laura Zangori, Assoc Prof at Mizzou, Science Education

Katie B : Hi all! Katie Boice, Research Associate at Georgia Tech CEISMC

Justina J : Hello, I am a research scientist from Georgia Tech's CEISMC.

Jessica G : Hello! I'm a Senior Research Scientist at Georgia Tech, CEISMC.

Michael C : Hi, I am Mike, Senior Researcher at TERC

Maia B : Maia Binding from The Lawrence Hall of Science at UC Berkeley, Curriculum Developer for 12-Jun Science

DANIELA V : K-12 Science Instructional Coach. North Thurston

Jayma K : Hello! I'm a research associate at CEISMC (GT)

Joan A : Hello from Brighton, MI - Science Coach

Tracey H : Tracey Hall, Senior Research Scientist CAST - Massachusetts - Hello

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Sarah C : Sarah Carter, STEM/Computer Science Specialist at the Minnesota Department of Education.

Janet B : Janet Bellantoni from The Lawrence Hall of Science at UC Berkeley, Curriculum Developer for 12-Jun Science

Matthew G : Good afternoon, I'm a graduate student at UW-Madison studying embodied learning in STEM education, specifically engineering education!

Natali B : Sience and STEAM Teacher. Truman Middle School Albuquerque Public School

John T : Retired engineer BSME; educator MEd (Physics/ Env Sci)...from KS

Cynthia G : Director of Teacher Education, Maryville College

Donna T : Hello, Donna Taylor, Prof. Dev Provider at the STEM Education Center at WPI in Central MA

Fran A : NY, NY - Program Director for a STEM technical assistance program for afterschool educators

Zijun A : Hello, Zijun Alexander. Doctoral student in research measurement and statistics at Georgia State

Beth M : Hi all! Beth McGinnis-Cavanaugh from the TEEMS project in Springfield, MA. I work with Isabel Huff, who is presenting with Steve Huard!

Alex J : Science Specialist #NAME? Dept of Ed

Sunni N : Hello - I'm Sunni Newton, a research scientist at Georgia Tech's Center for Education Integrating Science, Mathematics, and Computing (CEISMC)

Jennifer L : Jen Love Northeastern University engineering professor Center for STEM Education

Ben K : Hello everyone. Ben Koo from the UC Berkeley Lawrence Hall of Science, curriculum development project director

Brendan C : Brendan Callahan - Associate Professor of Biology Education, Kennesaw State University.

Heather R : Hello! Heather Roden from Space Camp in Huntsville, AL

Karen P : Karen Plaster with Engineering for Educators class from the University of Akron in Ohio

Wendy P : Wendy Phillips, PK-12 Math Coordinator in RI

Nicholas G : Nicholas Garafolo, Faculty member in Mechanical and Aerospace Engineering

Janine H : Hi!!! Janine Hidalgo, science and robotics educator.

maureen f : maureen ferry, architect and Teach SDG global ambassaor, designing sustainability curriculum for k12 using cities and the built environment [www.housestories.co](http://www.housestories.co)

Frank B : Associate Professor of Chemical Engineering, University of North Dakota

Robby C : Robby Cramer from Outdoor Discovery Center Science Education Specialist from Michigan

Shay F : Hello! Shay Fairchild TK12 science, computer science

Michael O : Hi everyone! Michael Occhino from University of Rochester; Science Education Outreach

Dodie R : Hello from Houston! I am a middle school science specialist at Region 4 Education Service Center.

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Jesus P : Good evening to all

Erin N : I teach STEAM 6th grade at Overall Creek Elementary

Jesus P : Thank you for sharing those links

Joni Falk : All three of these projects have a video in the video playlist available both on STEMtlnet.org and Multiplex.videohall.com “theme of the month” and you’ll see it.

Joni Falk : To find project lessons, and websites and interesting articles go to the Resources listed within each theme of the mont.

Jennifer L : I love the Boston Molasses disaster as an engineering case study/design project!

Joni Falk : Attendees, if you have a burning question post it in the chat!!!

Laura Z : I heard complaints from engineering teachers that engineering units are just science with engineering thrown in. What do you do to not have this happen? How are these two things equally treated within the unit?

Isabel Huff : Hi Laura, great question! I'm going to see if Marion asks it aloud, but if not, I'm happy to answer it in the chat 😊

Matthew G : One presenter discussed transfer (briefly). How was transferred determined and measured with respect to your study?

Alex J : How are you incorporating cultural responsive teaching and racial equity in your programs of study?

Michael C : For STEM integration, engineering design challenges are helpful. I am curious how teachers see opportunities to implement. (similar to Dr. Alemdar)

Amanda C : I really appreciate Alex Jones's question. Also, what training or PD is being given to teachers to teach/think with a systems thinking approach (and with an equity lens to piggyback off of Alex)?

Karthigeyan S : Can we say the engineering complements science content learning?

Jennifer L : Nidaa- what teacher self-efficacy instrument did you use? Or did you come up with your own survey questions?

Isabel Huff : @ Karthigeyan, yes! Complements, reinforces, makes more meaningful

Karthigeyan S : [Link to Engineering Concept Assessment.](#)

John T : Agree with challenges of STEM integration - so many STEM classes avoid science literacy ie. robotics - what is torque? what is Power (Watts)?....What is energy conversion?

Donna T : @ Karthigeyan - I always see science as 'informing' engineering

Michael C : Also equity question - some of what we discussed are not easily brought into schools. Any suggestions/thoughts?

Satabdi B : When you integrate engineering in science, how do you convince teachers to spend a couple of weeks from the school year to an engineering project? Asking because we have a science+engineering+computing curriculum (SPICE) and this has been a challenge we've faced. We've condensed our curriculum from 6 to 3 weeks now.

Matthew G : Thanks for the explanations!

Laura Z : Hi Isabel,

ani d : can you share about teacher training?

Laura Z : I would love to hear about integration of science and engineering.

DANIELA V : <https://www.iamascientist.info/educators>

Karthigeyan S : Do we assess students on the engineering concepts, ideas and practices and if so, how and how much?

ani d : @daniela the link is really nice

John T : In Physics - I let the content lead into the design process. Example: Linear/circular motion; energy conversion, statics, dynamics....design and build a wind turbine for design completion. A #PlaceBasedEd model (Content connection to community - KS 40% energy comes from wind). Bonus - the same model can be used throughout the year.

Sarah C : Our teachers say that the required academic standards get in the way of teaching STEM so they need to see how the STEM projects connect to the science they're required to teach. Love these examples for addressing that issue.

Amanda C : I have to go but thank you so much for this presentation and for sharing your work!

Kim Descoteaux : As we move to breakouts please put on your camera and unmute. Introduce yourself, offer a question that you are interested in or a short vignette about your experience. Let's keep it to two minutes at first so we can hear from each of you.

Jennifer L : Thank you I am unable to stay for breakout but this was a fantastic session! Thanks!

Justina J : Thank you for sharing your experiences & expertise with this impactful work!

Nidaa Makki : Jennifer Love, we used a published instrument; email me if you're interested in the paper (nmakki@uakron.edu)

Kim Descoteaux : This webinar has been recorded and will be available tomorrow on both STEMTLnet and the Multiplex sites. We hope that you will join the follow on discussions at <https://stemtlnet.org/> and <https://multiplex.videohall.com/>

Justina J : Thank you for this session! I look forward to looking at the videos and learning more about this community!

Meltem Alemdar : about cultural responsive pedagogy, this article was shared

Meltem Alemdar : Angela Calabrese Barton & Edna Tan -2019 Designing for Rightful Presence The Role of Making Present Practices, Journal of the Learning Sciences, 28:4-5, 10.1080/10508406.2019.1591411 to this article: <https://doi.org/10.1080/10508406.2019.1591411>

John T : thank you - appreciate the discussions on integrating science and engineering.

maureen f : Yes!! girls

Justina J : Thanks Meltem!

Alex J : Thank you!

Matthew G : Thank you!

Satabdi B : Thank you everyone!

Jesus P : Thanks for the insights, looking forward to learning more

Argyris N : thanks

Isabel Huff : Thank you all!

Chelsea Nicolino : Thank you so much!!