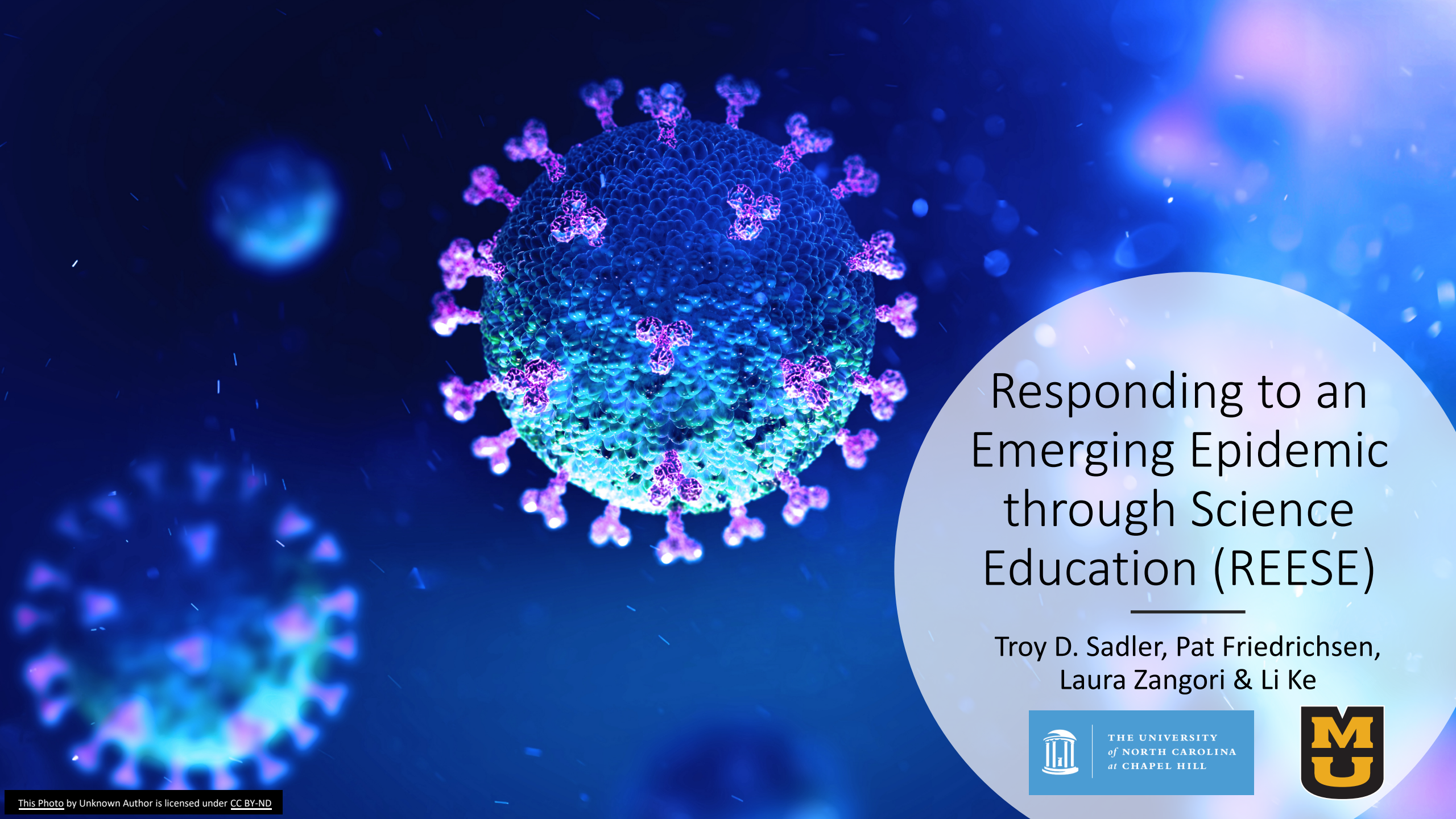

Responding to an Emerging Epidemic through Science Education (REESE)

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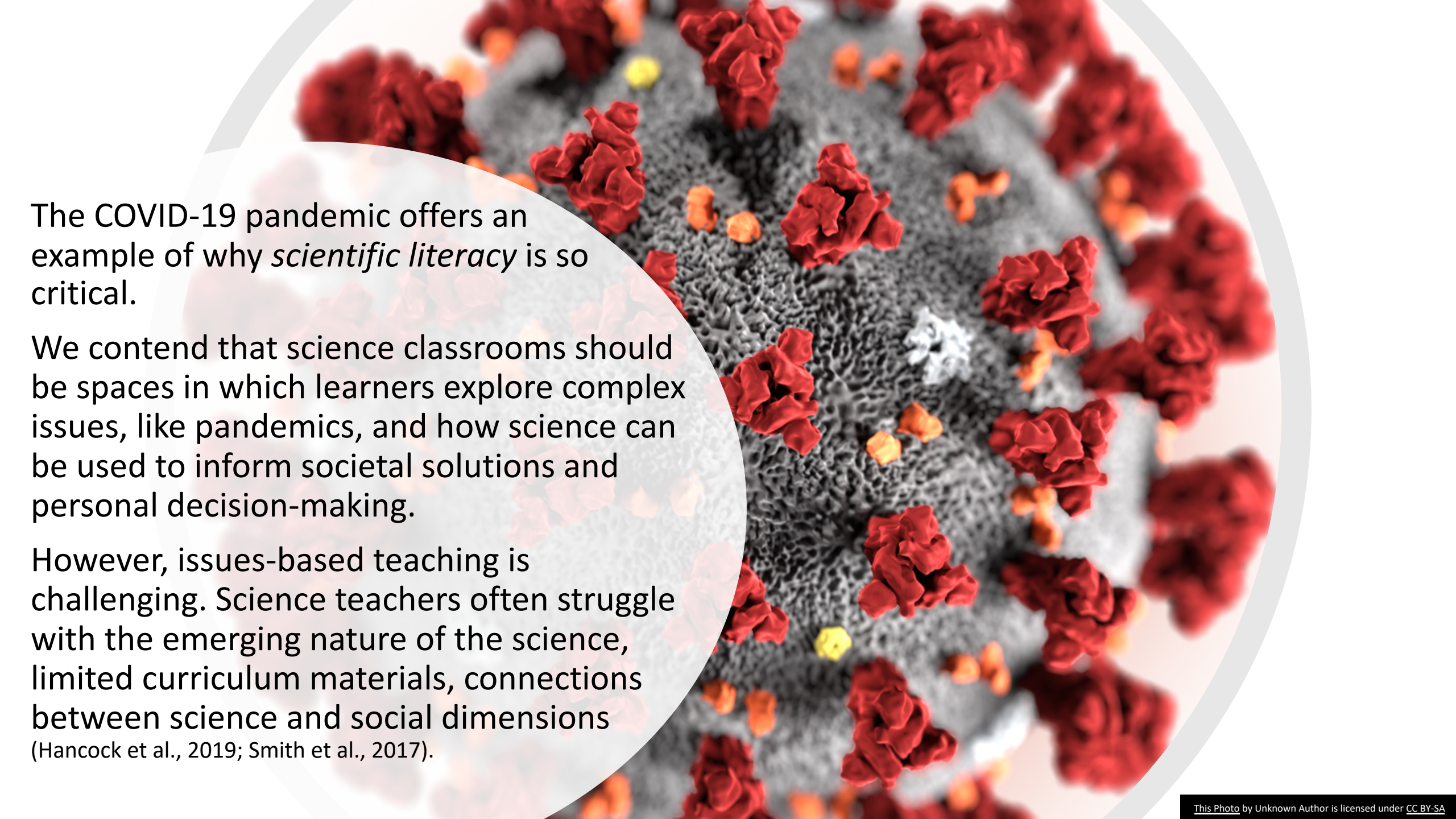


The COVID-19 pandemic offers an example of why *scientific literacy* is so critical.

We contend that science classrooms should be spaces in which learners explore complex issues, like pandemics, and how science can be used to inform societal solutions and personal decision-making.

However, issues-based teaching is challenging. Science teachers often struggle with the emerging nature of the science, limited curriculum materials, connections between science and social dimensions (Hancock et al., 2019; Smith et al., 2017).

Primary Goals

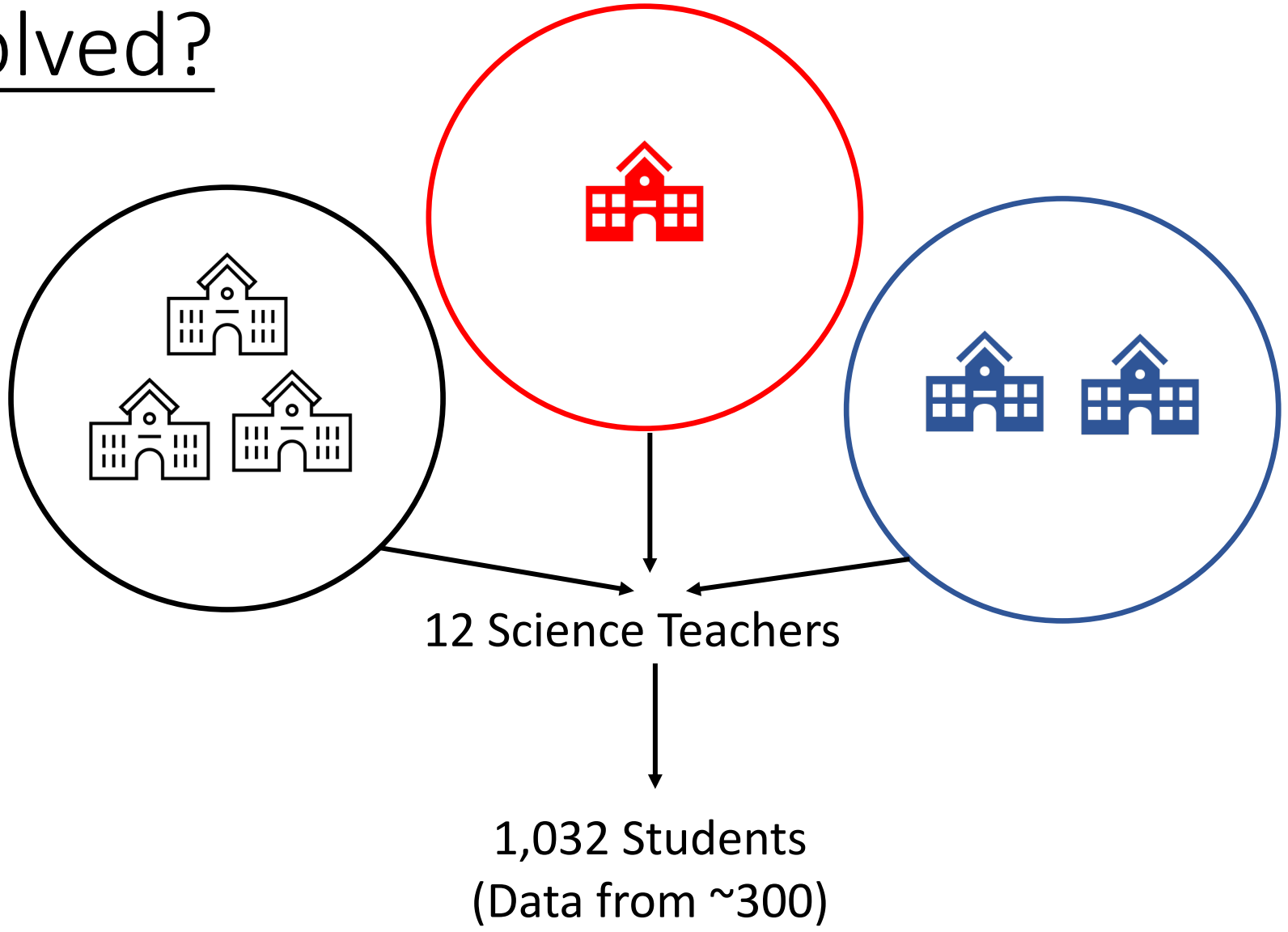
Collaborate with HS science teachers to create and implement COVID-related curriculum materials.

Study how teachers enact COVID-related materials AND how students respond to associated learning materials in the midst of the pandemic.

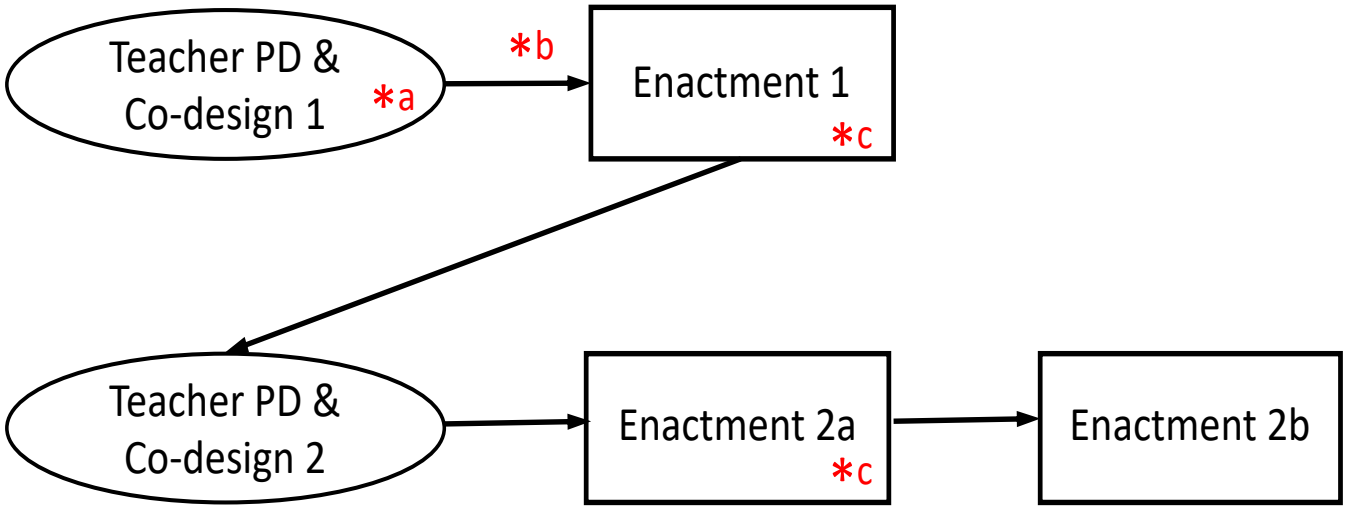
Contribution: An up-close examination of how the COVID-19 pandemic is affecting science classrooms, teachers, and students.

Who is involved?

University-based Science Educators



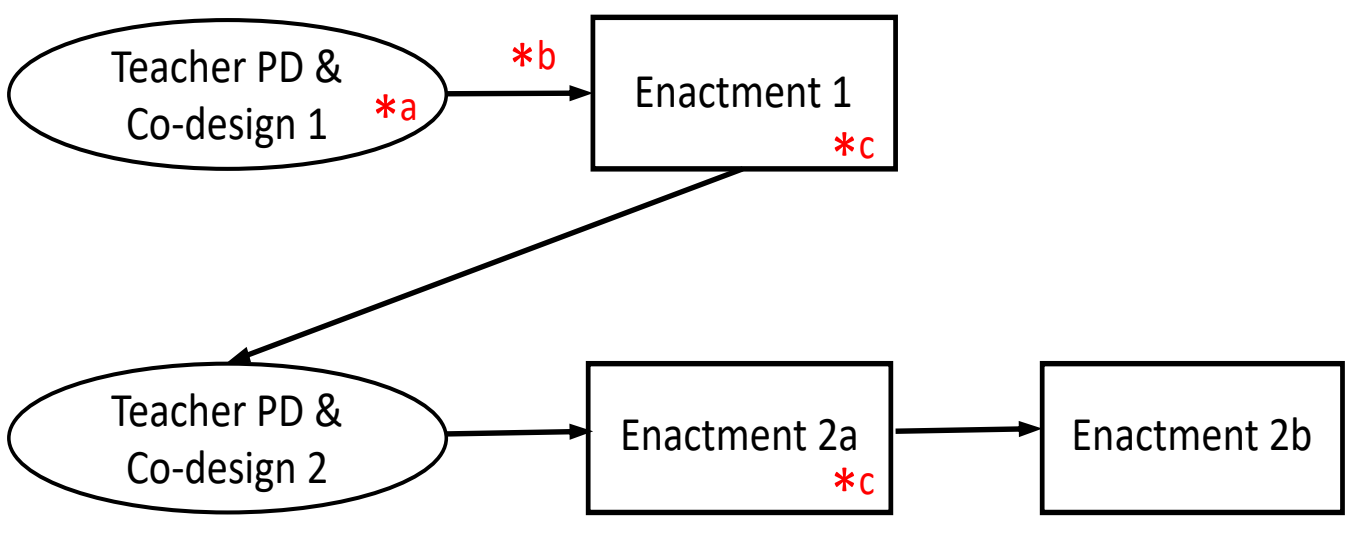
Project overview



Project overview

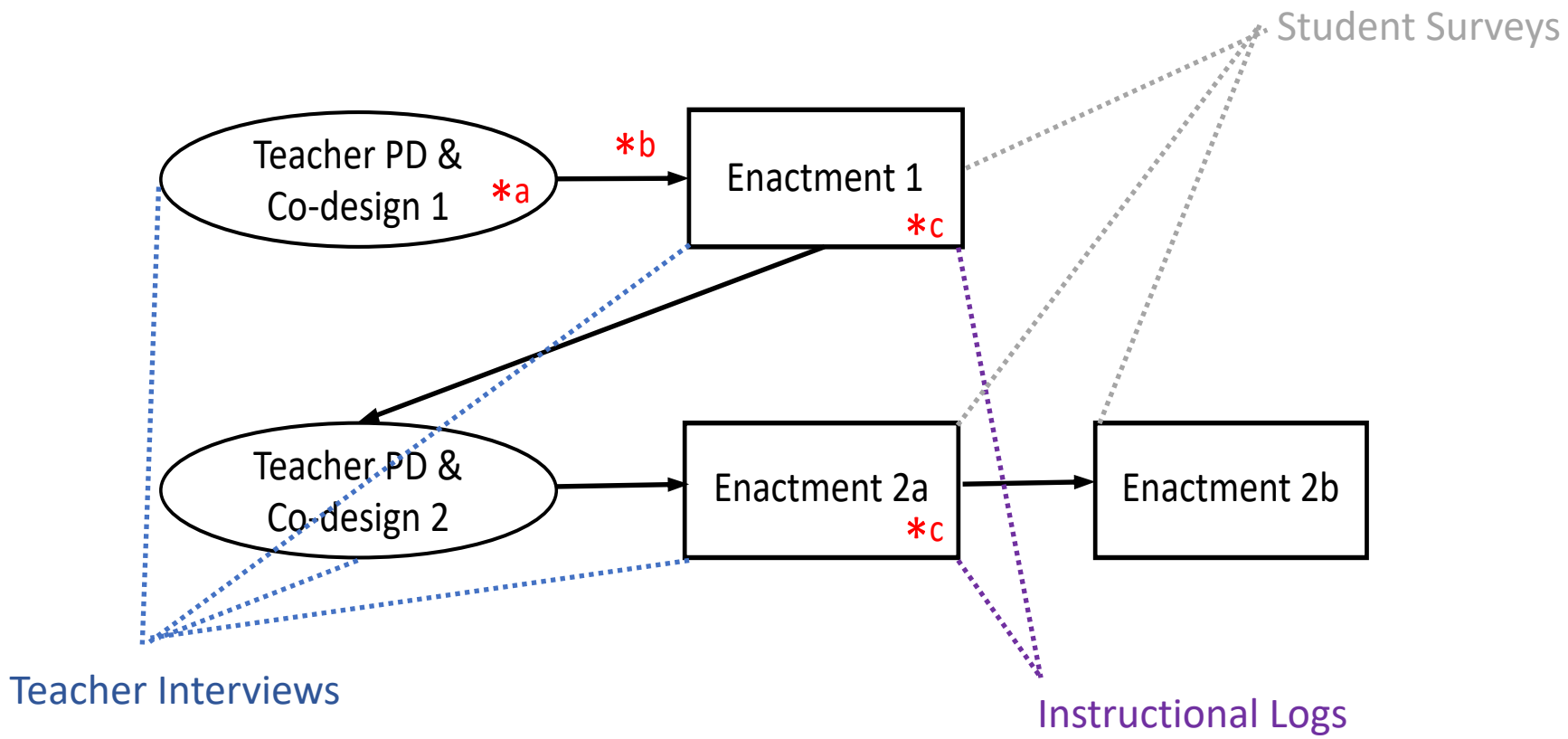
Curriculum materials that help students:

- Develop science ideas
- Use computational & mathematical models
- Develop media & information literacy skills
- Build systems thinking

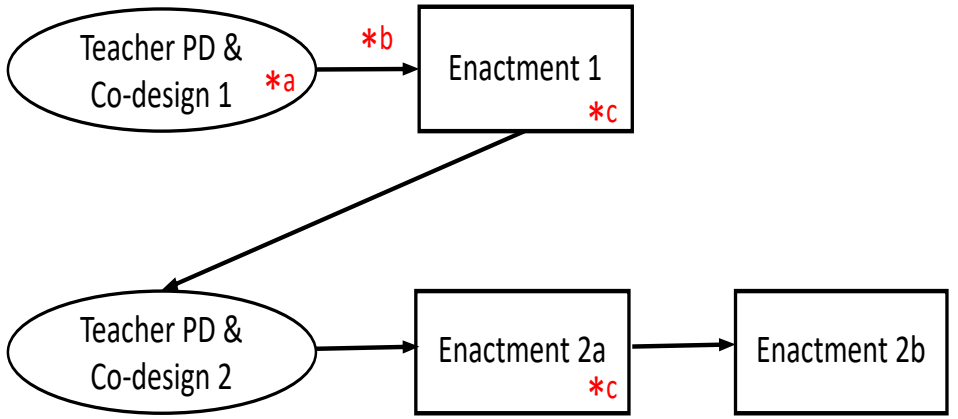


https://epiclearning.web.unc.edu/covid/

Data Sources



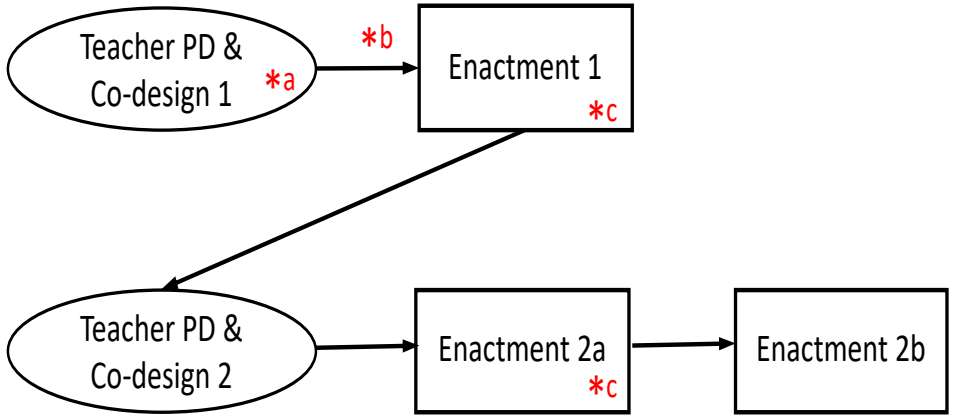
Key Findings from across the project



a) Teacher level Concerns

- Concern for students' mental health & potential impacts of instruction related to COVID
  - How might instruction interact with the trauma of the pandemic interact?
  - RESPONSE: Pediatric psychologist worked with group—learning about a trauma-inducing situation can support students' mental health
- Misalignment between standards (NGSS) and teaching about a pandemic
  - Do we have class time to address COVID?
  - RESPONSE: Highlight student engagement in science practices (modeling)
  - RESPONSE: Position COVID unit as vehicle for teaching characteristics of life

Key Findings from across the project

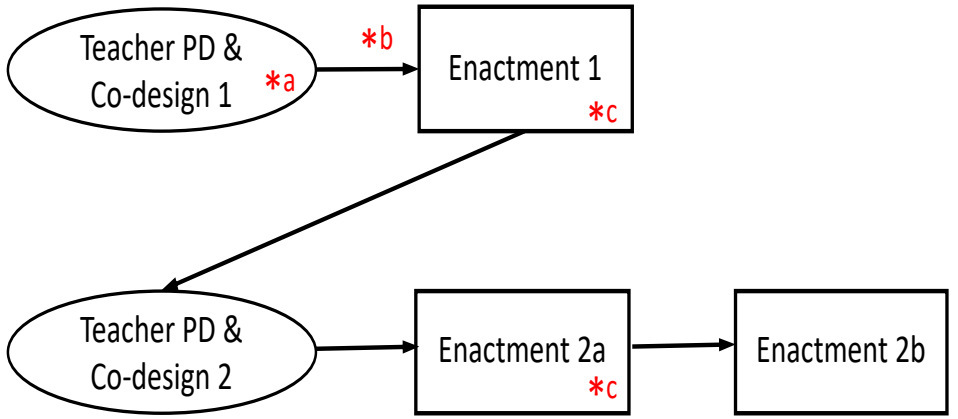


a) Teacher level Concerns

b) School/District level Challenges

- District policies for curriculum & instruction as country moves to distance learning (spring 2020)
  - District 1: Teachers control curriculum
  - District 2: Teachers control curriculum but student requirements are removed
  - District 3: District controls curriculum
    - Spring 2020- No new content to be introduced
    - Fall 2020- All biology classes across the district to follow same curriculum and pacing

Key Findings from across the project



a) **Teacher level Concerns**

b) **School/District level Challenges**

c) **Student level Perspectives**

- Most students identify reputable sources for their COVID information choices (e.g., CDC, medical professionals) including their Science Teachers
- Students very interested in learning about COVID & the pandemic.
- More interested in pragmatic issues (what are symptoms) than conceptual issues (how viruses reproduce)
- Most students expressed deep concern about the pandemic
  - Health, Family economic situation, Futility of online classes, Anxiety
  - Identify science classes as places to find useful information

Project Takeaways for STEM Educators & Educational Researchers

Celebrate: Students look to science teachers and science classes to help them make sense of complex issues.

Anticipate: How system constraints & situational factors may impact teacher practices.

Recognize: The outsized impact of district policy on innovation, curriculum & research.

Does a Research-Practice-Partnership help?

Project Papers:

Sadler, T. D., Friedrichsen, P., Zangori, L., & Ke, L. (2020). Technology-supported professional development for collaborative design of COVID-19 instructional materials. *Journal of Technology and Teacher Education, 28*, 171-177. https://www.learntechlib.org/p/216087/

Ke, L., Sadler, T. D., Zangori, L., & Friedrichsen, P. (in press). Developing and using multiple models to promote scientific literacy in the context of socio-scientific issues. *Science & Education*. DOI: 10.1007/s11191-021-00206-1 https://link.springer.com/article/10.1007%2Fs11191-021-00206-1

Sadler, T. D., Friedrichsen, P., Zangori, L., & Ke, L. (2021). *Responding to an emerging epidemic through science education (REESE): Project highlights spring 2021*. Chapel Hill, NC: University of North Carolina (9 pp.). (REESE_summary-AERA_sym2021)

Project Website: https://epiclearning.web.unc.edu/covid/

Contact: tsadler@unc.edu

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