



= Research Question



= Research Study



= Elementary Teachers



= Secondary Teachers

### GRAND CHALLENGE

Too few students are learning the science they need to make sense of our complex, 21st-century world.

### THE STeLLA HYPOTHESIS

Professional development on high-leverage teaching strategies through video-based lesson analysis can transform teaching and student learning.

## INSERVICE TEACHERS



Can the STeLLA approach effectively enhance teacher knowledge and practice and improve student outcomes?

## PRESERVICE TEACHERS



Can the STeLLA approach be effective as part of an elementary teacher preparation program?



### ViSTA (2004-2012)

Online program designed to prepare a small national sample of new teachers during their university methods courses. Promising results inspired deeper investigation.



### ViSTA Plus (2012-present)

Broader and more interactive educator preparation program showed successful science learning outcomes for new teachers and ultimately their students during the student teaching year.



Can STeLLA effectively prepare future secondary science teachers?



### STeLLA CO<sup>2</sup> (2017-present)

Collaborative program with university science and education faculty and local science teachers to prepare future secondary science teachers across Colorado.



### STeLLA 1 (2003-2008)

Original program in California showed the STeLLA approach can advance teachers' science knowledge and instruction in a way that impacts student learning. Promising results inspired deeper investigation.



### STeLLA CO (2009-2015)

Rigorous experimental study of a program that demonstrated significant improvements in science learning and outcomes for Colorado Front Range teachers and students in STeLLA classrooms. Results inspired deeper investigation.



Can STeLLA be effective as a district-wide program?



### RESPECT (2013-present)

A program that reaches all K-6 teachers in an urban district by preparing teacher leaders to facilitate STeLLA with their colleagues.



### Minnesota STeLLA (2015-present)

STEM-focused STeLLA program delivered over a shorter duration to a diverse population of K-12 science students across Minnesota.



### STeLLA High School (2015-present)

Study of a district-wide STeLLA program designed specifically for high school biology teachers across Louisville, Kentucky.



Can STeLLA be effective for secondary teachers and students?



### EMAT (2011-2017)

Free online course developed to help high school science teachers frame complex energy concepts in a relevant way for students, while also deepening teachers' own knowledge of content and teaching practice.



Can STeLLA be effective through an exclusively online intervention?



### STeLLA Online (2018-present)

Fully-online version of STeLLA CO program will be developed, tested, and studied to better understand if it can produce similar teacher and student impacts as the original face-to-face intervention.