

[COVID Information Commons \(CIC\) Research Lightning Talk](#)

[Transcript of a Presentation by Niu Gao \(Public Policy Institute of California\), July 26, 2023](#)



[Title: Impact of COVID-19 on Science Education: Early Evidence from California](#)

[Niu Gao CIC Database Profile](#)

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Transcript

*Slide 1*

Niu Gao:

Sorry, I forgot to unmute myself. Good morning and good afternoon. Thank you again for having me. My name is Niu Gao and I'm with the Public Policy Institute of California. In the next 10 minutes or so I will be presenting some of the key findings from our recent work looking at the impact of COVID-19 on science education. This is joint work with Kathy DiRanna from WestEd and Maria Chang Fay who's a doctoral student at UC Davis.

Slide 2

So recently, if you opened up a newspaper, you may see some major headlines talking about the test score declines. As you read through those articles, you notice that there has been some really dramatic test score declines, but then most of the articles are talking about the test scores declines in math or ELA- English Language Arts. So far, there has been very little evidence talking about or studies looking at how the pandemic has really affected science education. We all know that even before the pandemic, science had taken the back seat to math and English Language Arts so because of a lack of prioritization, we think the pandemic's impact might be more dramatic. So in this study, we're trying to fill this research gap and we're hoping to achieve four goals. Each goal would correspond to one research question.

So the first goal we're trying to understand is: what are some of the impacts of the COVID-19 on science education. The second goal: we're trying to understand some of the challenges facing

high needs districts - those are districts that serve a large share of low-income students, English learners, and also foster youth students. The third goal we're trying to understand or explore districts' plans to support science recovery. So for example, what are some of the common strategies and also programs have those districts developed or adopted to help students recover from the pandemic? The last part is we're trying to identify what are some of the policy levers we can actually leverage in order to support a more equitable science recovery?

### *Slide 3*

In this study, we're using - our the data for this study are coming from three primary data sources. The first one is in the fall of 2021 we launched the statewide survey of school districts. In this in the survey, we asked them about how COVID-19 really affects your operation and also your programming for science education. In California, we have about a thousand districts. Those districts serve about 6 million students. In our survey response we got about 213 just responded and those districts in total served about half of the K-12 student population.

We all know that nationwide, there has been a very dramatic decline in survey response rate due to COVID-19. Even though 213 doesn't look like a lot, we're pretty pretty happy with the results. Importantly, there's no significant difference in terms of the district characteristics. For example, high need or poor districts were just as like likely to respond to the survey. Most of the differences were coming from district size or locale. For example, rural districts, which tend to be smaller - they were less likely to respond to the survey. We know this has been true even before the pandemic.

The second piece of data are coming from districts' annual accountability documents. Those are called the local control accountability plans. All of the districts were required to develop and also post their plans on their website. We were able to obtain about close to 900 plans and those plans, they include a lot of details about what districts are trying to do and also the types of programs and services that they are providing to students.

The last piece of information is the semi-structured interviews with educational partners. We talked to nearly all of the county offices of education's regional leads for science. We also interviewed a sample of a high need districts and also some of the districts who were really leaders in terms of implementing the state's new science standards, also called the California Next Generation Science Standards. Last, we also interviewed about 15 statewide organizations and also statewide policy makers.

### *Slide 4*

In the next few slides I will just walk you through some of the key findings. Let me just start with some more encouraging news. In 2013, almost 10 years ago, California adopted new science standards. Those are called the Next Generation Science Standards or NGSS. If implemented well, NGSS has the potential of transforming science teaching and learning. In 2016, we did an initial study looking at districts' implementation. Back then, you can see that 78% of districts said they were in the implementation phase as defined by the state. In our recent survey, we asked them: before the pandemic which phase were you in? You can see that 94% of

the districts said they were in the implementation phase. So over time the NGSS implementation was progressing which is really encouraging.

#### *Slide 5*

Then there came the pandemic, which pretty much derailed science education. In our survey, we asked districts compared to pre-pandemic to what extent has science education become a higher priority, lower priority, stayed about the same priority? In this chart, you can see that 62% of districts said science had it become an even lower priority compared to before the pandemic. There is not much variation across districts and the only interesting thing we're seeing here is the urban-rural divide. To the right of the of this slide, you will see the breakdown for rural districts. About half or close to half (47%) of the rural districts said science stayed about the same priority, which is great. And fewer of them said science became a priority compared to statewide. Interestingly, about 13% of the rural districts said science actually became a higher priority. So we did some interviews with some rural counties and districts - they basically said because the remote location and also the lower population density, they were actually able to reopen much earlier. As a background, in California, the vast majority of students spent the entire 2020-21 school year online. So for some rural districts - one of the rural districts we talked to - they actually only closed for about two weeks and then they were able to bring students back right away. Also because in rural areas there's ample outdoor space. So we've seen some of the rural districts getting really innovative. They started doing a lot of science education and also science summer camps, trying to try prioritize science education.

#### *Slide 6*

Another way COVID-19 has really derailed science education is that during the time of crisis, districts provide a very limited support for science education. In this figure we're showing here are some very commonly used or evidence-based strategies to help students learn. The green bars we're showing is the share of districts that are providing those kind of supports for math or English language arts. The orange bars are the numbers for science. You can see that just getting through the chart, you see that fewer districts actually provided support for science education. One other thing I will highlight is the small group instruction or the high dosage tutoring. This was considered as one of the best, if not the best, strategies to help students recover, but we found that only 25% of the districts were actually providing this kind of service for science education.

#### *Slide 7*

Last in our survey, we also asked districts: looking ahead, to what extent do you plan to prioritize math, ELA, or science in your recovery plans? This chart summarizes the findings. Overall, you can see that over 80% of districts said math or ELA is a high priority in their recovery plans, but when you look at the science it is really heartbreaking. Only 27% of the district said science is a priority in their recovery plans. We're also seeing that 40% of district said science is a low priority or not a priority at all. So all of this taken together is really showing a very dramatic impact of the pandemic on science education. It also points to a very long recovery ahead given the lack of prioritization in science education.

*Slide 8*

This is the end of my presentation and you may find more additional results and also analysis in our report, together with our policy recommendations. Thank you all again and I'm looking forward to the Q&A later.