The Impact of COVID-19 on Science Education

Early Evidence from California

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California’s K–12 schools need to invest in science education

- Scientific literacy is essential for all students—and crucial for the global competitiveness of California’s future workforce

- The United States is behind other developed countries, and California is near the bottom on the National Assessment of Education Progress in science
  - In 2015, only 24% of students in grades 4 and 8 were proficient in science, well below the national average

- Science education in California needs to be more equitable
  - Large achievement gaps based on race/ethnicity and family income
California adopted the Next Generation Science Standards (CA NGSS) in 2013

- The CA NGSS have the potential to transform science teaching and learning

- Pre-pandemic NGSS implementation was uneven across districts and grade levels
  - Implementation was further along in K–8 than in high schools
  - High-need districts were further along than low-need districts

- COVID-19 changed the education landscape abruptly
PPIC examined science education during the pandemic and beyond

- What impact did COVID-19 have on science education?
- How do districts plan to support science education in recovery?
- What can policymakers do to support an equitable science education moving forward?
Our findings are drawn from multiple sources

- Survey of school districts in fall 2021
  - 213 districts serving 50% of K–12 population responded
  - No differences in factors that predict student learning

- Semi-structured interviews
  - More than 40 interviews with educational partners

- 2021–24 Local Control and Accountability Plans (LCAPs)
  - 858 of 1,034 district plans (83%) are posted online

- 2019–20 School Accountability Report Cards (SARCs)
  - A random sample of 376 schools (margin of error of 5%)
Equity across types of districts is a key focus

- High-need districts: at least 55% of students are high-need
- High-poverty districts: at least 75% of students are low-income
- High Black/Latino districts: at least 75% of students are Black/Latino
Science became a lower priority in most districts during the 2020–21 school year.
Alignment of science courses with CA NGSS was delayed in 2020–21

Middle school sequence
- 9% Delayed the process
- 17% No impact
- 74% Missing response

High school sequence
- 7% Delayed the process
- 18% No impact
- 75% Missing response
Support for science education has been limited during COVID-19

- Districts provided limited support for science education
  - 60% provided supplemental instructional materials
  - 43% offered summer science programs
  - 40% addressed social-emotional learning
  - 28% assessed student learning
  - 25% provided small-group instruction

- County offices of education received fewer requests for science-related professional learning or technical assistance
Most district recovery plans do not prioritize science education

- Math: 12% high priority, 13% not a priority
- English language arts: 13% high priority, 34% not a priority
- Science: 13% high priority, 34% not a priority
California can take steps to support equitable science education

- Include science in district accountability requirements
  - Include science in guidelines for spending stimulus money
  - Require line items for science education in LCAPs
  - Add science indicators to the state’s accountability measure
  - Add science test performance data to the dashboard

- Provide dedicated funding for professional learning in science

- Provide evidence-based strategies to support science learning recovery

- Work with educational partners to build a statewide coalition
Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Thank you for your interest in this work.