CCST EXPERT BRIEFING SERIES:
Toward a Disaster Resilient California

Training the Science
WORKFORCE OF TOMORROW

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Briefing held **SEPTEMBER 2021**

One Pager

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About the
CCST Disaster Resilience Initiative:

Ongoing, complex, and intersecting disasters—including climate change, extreme heat, power outages, and the COVID-19 pandemic—are radically disrupting the ways in which Californians live and work. CCST is committed to delivering science and technology advice to improve our resilience to disasters, reduce harm, and improve the lives of all Californians.

SUMMARY

- Educational institutions were forced to rethink how they delivered traditional classroom, hands-on, and other STEM training programs in a remote environment.
- As schools begin to resume in-person education, educators have a chance to use lessons learned to create resilient STEM education programs.
- The STEM workforce is primed to be a major driver of pandemic recovery and institutions must align their training programs with emerging industry needs.

California's Institutions Pivot to RESPOND TO THE PANDEMIC

The COVID-19 pandemic has disrupted nearly every aspect of society, and our education system has been no exception. As shelter-in-place orders were issued in March 2020, institutions of higher learning scrambled to adapt their operations to a remote setting.

Courses shifted to online formats quickly. Administrators pivoted to provide support for faculty in the form of training and access to software to facilitate online teaching. Courses with traditionally hands-on content, such as labs or job skills training, had to be completely reinvented to accommodate the new format.

At the same time, colleges and universities mobilized their resources to support students as they endured this abrupt transition. Access to technology and high speed internet proved a major barrier to students, forcing institutions to develop innovative ways to get laptops and tablets into the hands of students and ensure access to a stable Wi-fi connection.

OPPORTUNITY AND RESILIENCE

The economic recession triggered by the pandemic was unprecedented, leaving millions of Americans facing unemployment, food insecurity, and eviction or foreclosure.

At the same time, the nature of many jobs has been fundamentally transformed. Physical distancing has forced businesses to rethink their operations and remote or hybrid work environments will likely continue to be the norm in many industries. As the threat of emerging variants or future pandemics loom, employers are rebuilding with resilience in mind, ensuring they can adapt to changing circumstances with agility.

As we begin to rebuild, certain sectors are particularly poised to drive post-pandemic economic recovery.[1] Increased demand for highly trained workers in industries such as biotechnology and health sciences, logistics, cybersecurity, data science, and renewable energy offer an opportunity for institutions to adapt their training programs to anticipate these needs.

[1] Burning Glass Technologies.

SELECT EXPERTS

The following experts can advise on STEM education and training programs:

Moderator:

SHENEUI WEBER
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Diversity, Equity, & Inclusion in **STEM EDUCATION**

As part of their commitment to diversity, equity, and inclusion in the STEM, California institutions are striving to innovate their teaching techniques and engaging the cultural and lived experiences of students into their coursework.

Caltech offers trainings and support for inclusive teaching, covering topics ranging from transparency in course design to equitable grading practices.

STEM-NET, a program at the California State University (CSU), secured state funding as part of a collaboration with UC Davis to develop an adaptive, culturally sensitive learning model for introductory chemistry courses.

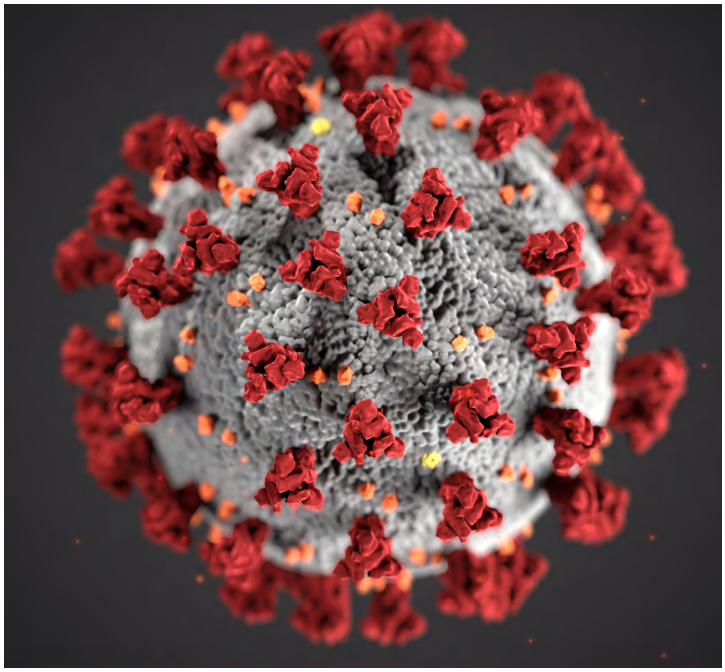

Figure: COVID-19 has disrupted nearly every aspect of society, and our education system has been no exception. (CDC)

Teaching our **TEACHERS**

At the Caltech Center for Teaching, Learning, and Outreach (CTLO), staff provide training to faculty on course design, evidence-based teaching techniques, and educational methods that promote inclusion, diversity, and equity.

During the pandemic, CTLO helped faculty develop innovative methods for teaching physics labs, neuroscience imaging techniques, and computer programming remotely.

Learning **OUT OF THE LAB**

STEM-NET (at CSU) was awarded a National Science Fund (NSF) RAPID grant to design virtual lab programs in response to the impacts of the pandemic on virtual education.

This program will design innovative, upper-level STEM labs in chemistry, physics, and math, specifically focused on supporting the success of CSU Hispanic-Serving Institution (HSI) students.

Developing Valuable **JOB SKILLS**

The San Diego-Imperial Region Life Science/Biotech Initiative at MiraCosta College prepares students to enter the booming biotechnology industry in Southern California.

Certificate and bachelor's degree programs in Biotechnology and Biomanufacturing teach students in-demand specialized skills such as quality assurance and supply chain management.

Industry apprenticeship programs give students the hands on experience that employers desire when hiring.