



**Recommendations from the STEM Community on Ongoing COVID-19 Response
Challenges and Recommendations to the Federal Government
April 2020**

The STEM Education Coalition has gathered a wide range of feedback from across the STEM education community in past days and weeks regarding needs, response, and future directions relative to the COVID-19 pandemic and its impacts on education. We have synthesized what we have learned from educators, educational leaders and administrators, state and local governments, professionals in STEM careers, and business and industry into a summary of the main challenges and a brief and direct set of recommendations. These recommendations are directed at Congress as it structures aid legislation to federal agencies as they organize to deal with this crisis.

Challenges and Recommendations:

- **Technology and Access Lacking to Support Distance Learning:** The most prominent concern voiced by members of the STEM education community was that of limited and unequal access to online, digital and distance learning. There is both a consistent lack of sufficient equipment and internet access at home in high-need communities. Many educational leaders are devoting a significant portion of their time responding to this challenge and most suffer from a dire lack of resources to distribute to students and parents.
 - Recommendation: We join other education groups in urging the Federal Communications Commission chair to make use of emergency powers to temporarily waive relevant E-rate program rules to ensure that all K-12 students have adequate home internet connectivity if their schools close.
 - Recommendation: Congress should provide additional funding through the E-Rate program and the USDA's ReConnect Program to support broadband internet expansion into communities still lacking access to internet for online learning.

- Recommendation: Congress should provide additional funding through the Every Student Succeeds Act Title IV, Part A Student and Success and Academic Enrichment program, which can be used by local schools to address these immediate needs

- **Frontline Educators Urgently Need Professional Development:** Virtually the entire education system has shifted to online and distance learning in just a few weeks, and this is expected to continue through the end of the current school year in most areas. A wide range of STEM educators, from K-12 through higher education, have struggled to adapt to this new environment, and are in urgent need of additional professional development assistance to adapt to this new reality. Higher education faculty are often faced with the same challenges as K12 educators. Their expertise is within their content area, and may not have the knowledge or ability to restructure courses for an online environment. Most institutions support distance education and online courses with pedagogical and technical training. However, faculty who were not previously trained for online or distance education were not prepared to transfer courses to a virtual environment. Of particular concern are courses with a highly technical or equipment-heavy components.
 - Recommendation: Congress should provide additional funding through the Every Student Succeeds Act Title II, Part A Preparing, Training, and Recruiting High-Quality Teachers, Principals, or Other School Leaders program, which can be used by both state and local school education authorities to provide educators with assistance and training. This funding stream can also be tapped by higher education institutions to promote partnerships with local school districts to assist educators with accommodating new forms of distance learning and access to virtual platforms that support STEM learning such as online laboratories.
 - Recommendation: The Department of Education should provide state and local education agencies with continued and prompt flexibility within the Every Student Succeeds Act accountability requirements to accommodate new forms of distance learning.

- **Insufficient Subject-Specific Content Resources to Support Distance Learning:** In addition to struggling with the realities of adapting their teaching methods to distance learning, educators are having great difficulty in finding digital educational tools that will help them effectively teach, especially in the STEM subjects. Another added difficulty is that educators are reporting that far too many of the existing online tools have been developed primarily for “expert users” and are not easily usable by the vast majority of educators.
 - Recommendation: Congress should provide additional funding to the Department of Education’s Education Innovation Research program to foster innovations in content development relative to distance learning at the

Department should prioritize such development in future competitive grant cycles.

- **Reduced Access to Informal Learning Experiences:** People learn STEM in and out of school—by visiting science and technology centers and museums, children’s museums, natural history museums, planetariums, public libraries, zoos, aquariums, gardens; by attending youth and community programs, science festivals and events; and by consuming science media (TV, film, radio, podcasts, and social media). Although students and families can still access science media, the institutions, programs, and events they rely on to experience in-person, hands-on, and experiential learning are temporarily closed to the public.
 - Recommendation: Ensure that the informal STEM education sector is considered a critical partner in the Federal COVID-19 response, especially as it relates to meeting the learning needs of students while schools are closed. Staff and professionals of informal STEM education organizations and institutions, while working remotely, are producing high-quality digital content, hosting virtual STEM learning and engagement events, and serving as partners for teachers and schools.
 - Recommendation: Federal agencies such as NASA, NOAA, and NSF have historically invested in research and the evidence-based development and implementation of initiatives that engage the public in STEM and educate K-12 learners and their families. Support these agencies in any needed flexibility with their informal STEM education grantees, including the ability to offer urgent operational support to maintain previous investments, and to leverage the expertise and existing educational products developed through their grant programs through the online learning and engagement opportunities being developed now by informal STEM learning professionals.
- **Expand Research into Distance Learning and the Digital Divide:** Educational research agencies need to vastly expand their efforts at validating best practices relative to distance learning, as well as supporting technological and pedagogical innovations. We also need better long-term solutions to a wide range of digital divide challenges.
 - Recommendation: Congress should provide additional funding for the National Science Foundation’s Education and Human Resources Directorate to address this challenge and NSF-EHR should prioritize this area of research systematically.
 - Recommendation: Congress should include additional support for distance and digital learning materials and capabilities relative to schools in any future infrastructure package.
- **Support the Data Collection Capacity of Educational Agencies:** It is clear that educational systems and agencies are going to need a major boost in their data

collection abilities to support a future return to a safe and healthy school learning environment where much more information on how to address health and community needs will be needed.

- **Recommendation:** Congress should provide additional funding for the Department of Education's Institute for Education Sciences and the National Center for Education Statistics to address this need in the future.
- **Recommendation:** Under the American Recovery and Reinvestment Act (ARRA), an online system was developed to collect and make public information on how states, districts, schools and institutions of higher education were using ARRA funds. The Department should undertake a similar initiative with the supplemental funds under the CARES Act and any additional assistance packages passed by Congress to collect and make public information on how these stimulus funds are being spent and their impact on the education of students.
- **Health Programs Needed to Enable a Return to Learning in School:** Looking forward to the Fall 2020 school season, educational institutions will have to adopt a range of new health protocols in order to return to learning. These will include close monitoring of student and educator health, facility cleaning and decontamination, and new controls for the maintenance of learning environments like science laboratories, computer labs and other STEM-centric facilities. Student and faculty mental health services will also be critical to restoring a healthy and safe environment.
 - **Recommendation:** Congress should provide additional funding to state and local education agencies and higher education institutions, either through existing health related programs or through further Stabilization Fund mechanisms, to address this ongoing challenge.
- **Vanishing Summer Internships, Learning Experiences:** One consequence of the current crisis has been the cancellation or reduction in traditional summer internships and other forms of experiential learning for students and teachers. This is especially acute in the STEM fields, where hands of learning is of particular importance.
 - **Recommendation:** Federal agencies to consider and develop virtual or distance learning options and opportunities for continued internship and summer learning experiences within agencies, national laboratories, and other federal workplaces. This action will also serve as a powerful example for U.S. industry to do the same as much as possible.
- **Digital Learning Concerns and Impacts to the STEM Higher Education Community** The higher education community is also facing significant impacts as a result of the pandemic, particularly as students and educators in STEM areas of study struggle with the lack of laboratories and other tools necessary to conduct research, hands-on learning, mentorships, and other institutional supports that promote academic success

and well-being. These concerns are even more notable for institutions serving a higher number of low-income students and minority-serving institutions.

- Recommendation: Congress should provide additional funding to institutions of higher education to ensure students have the financial ability to continue their studies during and after the pandemic.
- Recommendation: Federal agencies such as DoD, NOAA, and NSF that sponsor federally funded research at higher education institutions should publish uniform guidance that provides flexibility for grantee institutions on the use of federal research dollars to support grad students, PI's, and other research personnel financially during the pandemic to encourage continuity of federal research in the recovery period.