

Teaching Remotely Together: Lessons Learned

ACS Webinar, June 30, 2020

Resource List - Updated

The chemistry community has a wide range of resources to assist with teaching remotely in various and changing circumstances, some of which are compiled here. To facilitate use of this list, resources are organized into the general categories considered during the ACS Webinar held on June 30, 2020.

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Overall

- ACS Efforts and Resources on COVID-19 <https://www.acs.org/content/acs/en/covid-19.html>
- Resources for Teaching Your Chemistry Class Online: A Free to Read Collection from the American Chemical Society & the ACS Division of Chemical Education (free to read virtual issue of the *Journal of Chemical Education*) <https://pubs.acs.org/page/jceda8/vi/teaching-chemistry-online>
- Laboratory Learning (free to read virtual issue of the *Journal of Chemical Education*) <https://pubs.acs.org/page/jceda8/vi/laboratory-learning>
- *Accessibility in the Laboratory* (ACS Symposium Series Volume 1272) <https://pubs.acs.org/doi/book/10.1021/bk-2018-1272>
- *Growing Diverse STEM Communities: Methodology, Impact and Evidence* (ACS Symposium Series Volume 1328) <https://pubs.acs.org/isbn/9780841235328>
- *ACS Guide to Scholarly Communication* <https://pubs.acs.org/page/styleguide>
- Insights gained while teaching chemistry in the time of COVID-19 (upcoming special issue of *Journal of Chemical Education*) <https://pubs.acs.org/doi/10.1021/acs.jchemed.0c00378>
- COVID-19: Impact on Education Equity (resources and responses from the Education Trust-West)* <https://west.edtrust.org/covid-19-education-equity-resources-responses/>
- Informal STEM Education Resources for COVID-19 and Online Learning* (Center for Advancement of Informal Science Education) <https://www.informalscience.org/stem-education-resources-covid-19-and-online-learning?>
- Quality, Equity, and Inclusion during the COVID Crisis* (free webinar series from the Association of American Colleges & Universities) <https://www.aacu.org/events/webinar-series-quality-equity-and-inclusion-during-covid-crisis>

Professional (community)

- American Association of Chemistry Teachers <https://teachchemistry.org/>
- ACS Committee on Professional Training statements <https://www.acs.org/content/acs/en/about/governance/committees/training.html>
- ACS Division of Chemical Education <http://www.divched.org/>
- Biochemistry Authentic Scientific Inquiry Lab (BASIL) Consortium* <https://basilbiochem.github.io/basil/index.html>
- ChemEd Xchange <https://www.chemedx.org/>

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- National Consortium for Secondary STEM Schools* <http://www.ncsss.org/>
- Organic Educational Resources* <https://www.organicers.org/>
- STEM Teaching Tools* <http://stemteachingtools.org/news/2020/guidance-for-supporting-science-learning-during-covid-19>
- Strategies for teaching chemistry online Facebook Group* <https://www.facebook.com/groups/849427775469472/>
- Teachers Using Google Classroom Facebook Group* <https://www.facebook.com/groups/teachersusinggoogleclassroom/>
- Virtual Inorganic Pedagogical Electronic Resource (VIPeR)* <https://www.ionicviper.org/>
- Other organizations and cohorts

See also Overall

Philosophical (principles)

- Blogs, such as
 - Adapting Science Lessons for Online Learning* (Edutopia) <https://www.edutopia.org/article/adapting-science-lessons-distance-learning>
 - Flexibility and Collaboration, Not Waivers, Will Make Remote Learning More Equitable* (EdSurge news) <https://www.edsurge.com/news/2020-04-04-flexibility-and-collaboration-not-waivers-will-make-remote-learning-more-equitable>
 - Four Best Practices for Distance Learning to Support Students Who Learn and Think Differently* (Common Sense Education) <https://www.commonsense.org/education/articles/4-best-practices-for-distance-learning-to-support-students-who-learn-and-think-differently>
 - Making Online Teaching a Success* (The Scientist) <https://www.the-scientist.com/news-opinion/opinion-making-online-teaching-a-success-67290#.XnN43u6ijdU.email>
 - Seven Ways to Make Distance Learning More Equitable* (Common Sense Education) <https://www.commonsense.org/education/articles/7-ways-to-make-distance-learning-more-equitable>
- Books, such as
 - *Cheating Lessons: Learning from Academic Dishonesty* by James M. Lang* <https://www.jamesmlang.com/books>
- Continuity of Learning: COVID-19 Overview* <https://www.digitallearningcollab.com/covid19-overview>
- Resources on ethics, including those from ACS Committee on Ethics <https://www.acs.org/content/acs/en/about/governance/committees/ethics.html>
- Other advice, guidance, and statements

See also Overall and Professional (community)

Pedagogical (format/design)

- Use of inquiry-oriented pedagogies
 - How to Manage POGIL Online* <https://pogil.org/teaching-online-during-the-covid-19-crisis?>
 - POGIL Activities in an Asynchronous Learning Environment <https://www.chemedx.org/blog/pogil-activities-asynchronous-learning-environment>

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- Use of case studies, such as:
 - National Center for Case Study Teaching in Science* <https://sciencecases.lib.buffalo.edu/>
- Use of scientific data, stories, and literature, such as:
 - BioInteractive* <https://www.biointeractive.org/>
 - Science in the Classroom* <https://www.scienceintheclassroom.org/>
 - SciStarter* <http://www.scistarter.org/>
 - Zooniverse* <https://www.zooniverse.org/about>
- Use of social and emotional learning
- Use of writing, such as:
 - Calibrated Peer Review* <http://cpr.molsci.ucla.edu/Home>
- Other evidence-based curricular approaches, methods and practices

See also Overall and Professional (community)

Instructional (delivery and assessment)

- ACS Exams (non-secure testing of general and organic chemistry) <https://uwm.edu/acs-exams/>
- Building a Social Presence in the Online, Synchronous Classroom* https://www.youtube.com/watch?v=2Jij_YE_g0c&list=PLJSYKbO0r9fnAlJ68JhrFqpciFrXMYq40
- Carolina* <https://www.carolina.com/>, including Carolina Science Online* <https://carolinascienceonline.com/#/>
- ChemCollective* <http://www.chemcollective.org/>
- Chemistry at Home <https://www.acs.org/content/acs/en/education/resources/topics.html>
- Concord Consortium* <https://concord.org/>
- Dynamic periodic table, such as
 - Ptable* <https://www.ptable.com/>
- Flinn Scientific* <https://www.flinnsci.com/>, including Flinn At-Home Science* <https://www.flinnsci.com/athomescience/>
- Kitchen Chemistry Collection <https://teachchemistry.org/news/kitchen-chemistry-collection>
- Khan Academy* <https://www.khanacademy.org/>
- Learning Assistants in e-learning* <https://sites.google.com/view/laa-elearning>
- Minecraft (Chemistry)* <https://education.minecraft.net/chemistry>
- Online homework, such as:
 - OWL Cengage* <https://www.cengage.com/owlv2/>
- Online Resources for Science Laboratories (POD) – Remote Teaching* <https://docs.google.com/spreadsheets/d/18iVSleOqKjj58xcR8dYJS5rYvzZ4X1UGLWhl3brRzCM/edit>
- Open Learning Initiative* <https://oli.cmu.edu/>
- People Behind the Science* <http://www.peoplebehindthescience.com/>
- Scientist Spotlight* <https://www.sfsusepal.org/scientist-spotlight/>
- Simulations, such as:
 - American Association of Chemistry Teachers <https://teachchemistry.org/classroom-resources/simulations>
 - ChemDemos* <https://chemdemos.uoregon.edu/>
 - Gizmos* <https://www.explorelarning.com/>
 - PhET simulations and lessons* <https://phet.colorado.edu/>
 - SimBio* <https://simbio.com/>

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- Support for the rapid transition to remote teaching*
<http://www.flynnresearchgroup.com/gettingcoursesonline>
- Tips for teaching in the time of coronavirus from veterans in online instruction
<https://cen.acs.org/education/Tips-teaching-time-coronavirus/98/i12>
- Virtual labs, such as:
 - BeyondLabz* <https://www.beyondlabz.com/>
 - ChemVLab* <https://chemvlab.org/home/index.php>
 - Labster* <https://www.labster.com/>
 - Online Interactive Chemistry Labs* <https://landing.inspark.education/online-interactive-chemistry-labs?>
- Videos, such as
 - *Chemistry in Context* 10th Edition Interactive Activities*
<https://www.acs.org/content/acs/en/education/resources/undergraduate/chemistryincontext/interactives.html>
 - Pivot Interactives* <https://www.pivotinteractives.com/>
 - YouTube videos* (many)
 - Mark Rober*
https://www.youtube.com/channel/UCY1kMZp36IQSyNx_9h4mpCg

See also *Overall and Professional (community)*

Technological (tools)

- 20 Tips for Teaching an Accessible Online Course* <https://www.washington.edu/doit/20-tips-teaching-accessible-online-course>
- Accessibility tool, such as
 - Ally (use with LMS)
- Chemistry drawing programs, such as
 - ACD ChemSketch* <https://www.acdlabs.com/resources/freeware/chemsketch/>
 - ChemDoodle* <https://www.chemdoodle.com/>
 - MarvinSketch* <https://chemaxon.com/products/marvin>
 - MolView* <http://molview.org/>
 - PubChem Sketcher* <https://pubchem.ncbi.nlm.nih.gov/edit3/index.html>
- Document cameras, such as
 - IPEVO* <https://www.ipevo.com/>
- Document markup software, such as
 - Drawboard* <https://www.drawboard.com/>
 - iAnnoate* <https://www.iannotate.com/>
- Document scanner, such as
 - CamScanner* <https://www.camscanner.com/>
- Learning Management Systems, such as
 - Blackboard Collaborate* <https://www.blackboard.com/teaching-learning/collaboration-web-conferencing/blackboard-collaborate>
 - Canvas* <https://www.instructure.com/canvas/>
 - D2L* <https://www.d2l.com/>

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- Screen capture software, such as
 - TechSmith* <https://www.techsmith.com/>
- Student engagement platforms, such as
 - EdPuzzle* <https://edpuzzle.com/>
 - Escape rooms
 - FlipGrid* <https://info.flipgrid.com/>
 - Gimkit* <https://www.gimkit.com/>
 - GroupMe* <https://groupme.com/en-US/>
 - Kahoot* <https://kahoot.com/>
 - Nearpod* <https://nearpod.com/>
 - Pear Deck* <https://www.peardeck.com/googleslides>
 - Podia* <https://www.podiaapp.com/>
 - Poll Everywhere* <https://www.polleverywhere.com/>
 - Quizzizz* <https://quizizz.com/>
- Studying platforms, such as
 - Quizlet* <https://quizlet.com/>
- Testing/proctoring software, such as
 - Examity* <https://examity.com/>
 - Gradescope* <https://www.gradescope.com/>
 - Lockdown browsers (e.g. Respondus* <https://web.respondus.com/he/lockdownbrowser/>)
 - Proctorio* <https://proctorio.com/>
 - ProctorU* <https://www.proctoru.com/>
- Video software, such as
 - iMovie* <https://www.apple.com/imovie/>
 - Kaltura* <https://corp.kaltura.com/>
- Whiteboards, such as
 - Jamboard* <https://jamboard.google.com/>
 - A Web Whiteboard* <https://awwapp.com/#>
- Other tools and platforms, such as
 - Science Journal* <https://sciencejournal.withgoogle.com/>

See also Overall and Professional (community)

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