Massachusetts STEM@Home

The Massachusetts Department of Elementary and Secondary Education (DESE) is partnering with the following organizations and agencies to provide access to educational enrichment options for students, families, and educators during the disruption of classroom learning due to COVID-19:

- MA Department of Early Education and Care
- MA Department of Higher Education
- MA STEM Advisory Council
- MA Regional STEM Networks

The linked resources are intended for use by families, educators, and/or students to support enrichment and continuity of learning during the COVID-19 crisis. These resources are free and open to the public, and may or may not be aligned to a student's specific coursework. The majority of resources were created and made available through sources other than the Department. **The State and the Department do not endorse any of the following curricula or resources.**

Resources have been grouped into the following categories:

- Statewide and/or General Resources
- By Subject
- By Learner Characteristic

The following list will be updated on a rolling basis. Last updated on: May 4, 2020

Statewide and/or General Resources

State-Produced Resources

Center for Instructional Support Content-Specific Remote Learning Guide for Administrators and Educators
MassCore Information for Families
Current MCAS Instructional Frameworks
DESE's STEM Site
DESE Free Course and Activities Bank for Students

Teacher-Focused Resources and Webinars

Ongoing Calendar of Teacher Webinars: MetroWest STEM Education Network & McAuliffe Center
Virtual STEM Teacher Meet-Ups: WPI STEM Education Center
Boston Public Schools Learning Resources: All Grade Levels with Videos
NSTA Daily Do - National Science Teaching Association
TNTP: Shifting to At-Home Learning
Mount Holyoke: Free Online Teaching Support Group with Videos and PD for Transition to Virtual
New Teacher Center: Resources, Live Webinars, and Communities of Practice
College Board: AP Student Learning During School Closure
Learning In The Time Of COVID-19 by Learning Policy Institute President Linda Darling-Hammond
Seeds of STEM: PreK-2 Resources from WPI
Patriots Hall of Fame Education Activities
Science from Scientists Lesson Bank
American Association of Chemistry Teachers: Elementary, Middle, High, and AP Chemistry Resources
STEM Teaching Tools: At-Home Learning Guides in Multiple Languages

Teaching and Learning Platforms

Buncee Classroom - Creation and Communication Tool for Students, Teachers, and Administrators
Zoom: Video Conferencing with School Rate Options
Google Hangouts: Video Conferencing with Advanced Features through 7/1/20
Pronto: Communication Platform with Chat and Video

Multiple Subjects and/or Grade Levels

WGBH Distance Learning Center

MIT's Full STEAM Ahead K-16 Resource Bank
Harvard LabXChange Science Resources for Educators and Learners
Museum of Science at Home: Science Resources for All Ages
STEM Leadership Alliance: Learning Resources During COVID-19
Harvard Graduate School of Education Lesson Bank with Resources by Grade Level
Science from Scientists: Family Activities and Resources
NASA STEM@Home Resources
McAuliffe Center Compilation of STEM Resources
UpToTen: Fun Parent Games and Resources
STEM Ecosystems: STEM@Home Activities for all Ages
National Science Foundation: List of STEM Resources
CK-12 Online Lesson Bank: All Subjects All Grades
WGBH for Parents: Resources, Videos, and Kids Daily Newsletter!
Creative Learning Systems: Free, Project-Based Learning Curriculum
JASON Learning: Free Access to Curriculum
BrainPop
Discovery Education
Khan Academy
Newsela
PBS Learning Media
Scholastic
TED Talks for Kids
Smithonian Magazine Education During the Coronavirus Crisis
Smithsonian Magazine Eight Digital Education Resources from the Smithsonian
NBC Learn: K12 Videos and Resources
Community for Advancing Discovery Research in Education: Multi-Grade Level, Searchable by Content, Learner, and Type
Education Development Center (EDC): Virtual Learning Tips for Parents and Educators
Adaptive Learning Curriculum Resources

Pandemic-Related
i2 Learning: Why No School? Resources and Activities to Learn About COVID-19 and Viruses
Computer Science Students Build Coronavirus Tracking Website
Scientists Need your Computing Power to Find a Cure for Coronavirus
Stanford Group Wants to use Your Computer to Help Researchers Study the Coronavirus
How Computer Modeling Of COVID-19's Spread Could Help Fight The Virus
Coronavirus: Protect Yourself and Stand Against Racism - Facing History and Ourselves
COVID-19 Module - World History Digital Education
How to Talk to your Kids About Coronavirus - PBS
Misinformation, Data Literacy and the Novel Coronavirus - KQED
Resources for Navigating Coronavirus Disease 2019 (COVID-19) - National Council for Social Studies
The ultimate kids' guide to the new coronavirus - Live Science
Visualizing the History of Pandemics - Visual Capitalist

Virtual Field Trips
National Science Foundation: List of Centers and Museums Offering Virtual Learning
Turtle Bay Exploration Park: Channels Exploring Animals, Exhibitions, and Gardens
20 Virtual Field Trips to Take with Your Kids - Adventures in Familyhood
25 Amazing Virtual Field Trips for Kids - Spring 2020 - We Are Teachers
Farm Food 360° - Farm and Food Care Ontario
Great Wall of China - The China Guide
Here's 33 National Park Tours You Can Take Virtually From the Comfort of Your Home - Totally the Bomb

Louvre Museum Online Tours
Stuck at Home? These 12 Famous Museums Offer Virtual Tours You Can Take on Your Couch (Video) - Travel+Leisure
VirtualFieldTrips.org
LiveCams - Explore
Springfield Museum Virtual Fieldtrips and Activities

Before and Afterschool
BOKS At Home - Resources for physical activity
Chess.com
HippoCampus.org
Just for Kids - National Oceanic and Atmospheric Administration
NASA Kids' Club
Sight Words Games - Sightwords.com
STEM Videos - MIT
Vocabulary Games - PBS Kids
Financial Literacy

Physical Education and Health
Health Education Skills Models - RMC Health
Tools for Creating an Active Home - Online Physical Education Network
Virtual Resources for Health and P.E. - SHAPE America
KidsHealth

STEM Workforce and Employer Resources
DESE's College, Career Readiness Guides
Brigham and Women's and Boston PIC's Youth/Employer Engagement Guide and Investment in Internships
MA Connecting Activities - Youth Internships

By Subject:

Astronomy
DIY Universe: McAuliffe Center and NASA's Universe of Learning (All Levels)
Planetarium at Home! McAuliffe Center's Virtual Live Planetarium Experience
NASA's STEM@Home Resources

Biology & Life Sciences
Harvard Graduate School of Education's EcoMUVE Virtual Environment Curricula
National Science Teaching Association: Virtual Biology Labs Collection
PBS NOVA Labs: Interactive Games in Authentic Scientific Exploration

Chemistry
Virtual Chemistry and Simulations - American Chemical Society
Easy Chemistry Experiments to Do at Home!
American Association of Chemistry Teachers: Elementary, Middle, High, and AP Chemistry Resources
University of Wisconsin: Virtual Museum of Molecules and Minerals
Chem Chollective: Online Teaching & Learning Chemistry Resources
Playmada Games: Digital Games Grounded in the Rules of Chemistry
Beyond Benign: Green Chemistry Education and Virtual Resources

Digital Literacy and Computer Science

Amazon Future Engineer: Free CS Courses
Carnegie Mellon Computer Science Academy CS Curriculum
Carnegie Mellon University Robotics Academy: Free Curricula and Resources
Code Club Projects: Coding Projects Including platforms like Scratch, HTML/CSS, Python, Blender, MicroBit, Raspberry Pi
Code.org: CS Courses for Middle and High School
Code.org: CS Fundamentals for Elementary Classrooms (K-5)
Codecraft Works: Create Coding Projects, Programming Languages, and Digital Portfolios
CoderZ: Virtual Simulation Software to Practice Programming
Common Sense Education: Digital Citizenship (All Levels)
CS Unplugged: Free Teaching Materials through Games and Puzzles with Household Items
CSForAll Membership Directory
Exploring Computer Science: High School-Level, Research-Based CS Curriculum and Teacher PD
Girls Who Code: Code at Home
Hour of Code: Coding Activities and Videos for All Ages
iRobot: Variety of Virtual and Offline Coding Activities and Projects
NICERC @ Home
Resources to Support Teaching During COVID-19 - From CSTA
Scratch Jr: An iPad App Allowing Younger Students to Create Basic Projects Using Colorful Block-Based Code
Scratch: Open Computing Platform to Program Your Own Stories, Games, and Animations
STEMFuture — Self-Paced, Self-Guided Workshops on CS (All Levels)
Tata Consultancy Services: Experiential, Immersive Technology Education for Middle and High School
Tech For Learners: A Collection of Tech Teaching Resources from Mt. Holyoke
Tynker — Free Access to Tynker Platform and Curriculum

Design & Music
ArtsEdge Resources for Families, Students, and Educators - The Kennedy Center
Dallas Museum of Art Open Access Resources
DC Arts and Humanities Education Collaborative Distance Learning Resource Database
Google Arts and Culture - Virtual museum tours and other resources.
Lincoln Center Pop-Up Classroom - Facebook Live broadcasts every Monday-Friday at 10 a.m. ET.
Music Education Resources - Save the Music Foundation
NGAkids Art Zone for iPad App - National Gallery of Art
PBS Learning Media: The Arts - Standards-aligned resources for dance, music, theatre, and visual arts.
Taking Music Education Teaching Online - Give a Note Foundation

Earth & Environmental
International Space Station: Image of the Week with Resources (All Levels)
National Oceanic and Atmospheric Adminstration (NOAA): Ocean Data in the Classroom
Change is Simple: Environmental, Sustainability, Climate Education Curriculum
KCVS: Explaining Climate Change
Encounter EDU: Bring the Ocean to the Classroom
Ocean Exploration Trust: STEM Learning Modules
SciJinks: It's All About Weather!
Mpala Live: Lessons and Video in Kenya's Laikipia County

Engineering
Festival Expo Videos - USA Science and Engineering Festival
Common Sense Education: Free Engineering Activities and Resources

General Science

MA Association of Science Teachers: Virtual Resource Bank
Open Sci Ed: NGSS-Aligned Science Curriculum and Resources
#VALUE!
PITSCO Education: STEM@Home Projects and Lessons with Quizzes (All Levels)
Citizen Science Projects: Science Research Projects
Science Over Everything: NGSS-Aligned Remote Learning Resource Modules
Celebrate Urban Birds - Cornell Lab of Orinthology - Cornell University
Science Experiments with Bottles
STEM Du Page: STEM Tips and Project Ideas for Parents
PBS LearningMedia: Science
Science Buddies: Serving Up Science at Family Dinners
Scientific American
Skype a Scientist
Virtual Science Education Resources - Phenomena for NGSS
What's Going on in This Graph? - Nebraska Edition - Science Literacy Initiative at the University of Nebraska-Lincoln
Little Bins for Little Hands: STEM Activities and Projects
University of Colorado Boulder: PhET Interactive Science Simulations (All Levels)
Mims House of Books: Free Science Non-Fiction Stories
Britannica Learn: Free Virtual Learning Resources
ExploreLearning: Hands-On Math and Science Simulations
Great Minds On the Go: Daily Instructional Science Videos
Oregon Department of Education: Open Learning Resources (All Levels)
NGSS Phenomena: NGSS-Aligned Virtual Phenomena-Based Learning

Mathematics
IXL: MA Standards-Aligned and AI-Reactive Math Problems (All Levels)
National Council of Teachers of Mathematics: Free Resources for Teaching Math
NCTM: Math Problems of the Week
Mathematics Assessment Resource Service: Free Middle and High School Summative Tasks
Texas Instruments: TI Graphing Calculator Resources and Activities
University of Cambridge: NRich Math Enrichment Activities
ALEKS: Adaptive, Online Math Program Grades 3-12, 2 months free by 4/30/20
StrADDegy - Number sense activities for students.
Links to Resources for Shifting Instruction Online - Illustrative Mathematics
Top 5 Resources for Learning Online - Achieve the Core
Online Mathematics Resources - National Council of Teachers of Mathematics
Math Modeling - Society of Industrial and Applied Mathematics
Mathalicious: Real-world Middle and High School Math Lessons
Illustrative Mathematics: Free Self-Guided Math Resources
Yummy Math: Real-World, Engaging Math Activities
Math Jams: Hundreds of Free Math Videos
Dan Meyer's 3-Act Math Tasks
Graham Fletcher's 3-Act Math Tasks
YouCubed: Math Tasks (All Levels)
Classroom Freckle: CCSS-Aligned, AI-Adaptive Instructional Math Videos
Open Middle: Middle School-Level Math Puzzles and Tasks
Curriculum Associates: Free, At-Home Math and Reading Activity Packs (K-8)

Physical Education and Health
Health Education Skills Models - RMC Health
Tools for Creating an Active Home - Online Physical Education Network

Virtual Resources for Health and P.E. - SHAPE America
KidsHealth

Physics
MIT Blossoms: Math and Science Video Physics Lessons
Vernier Video Analysis: A Physics-focused Interactive Tool to Record Videos with Recorded Motion

Statistics
Khan Academy: Statistics and Probability Resources
CK-12 Statistics Lessons and Videos

General Skill Building
MA Work-Based Learning Resources
Financial Literacy Curriculum for Students and Families

AP-Specific Courses
AP Online Classes and Review Sessions
College Board: AP Student Learning During School Closure
College Board: AP Instructional Support Videos - Session 1 Foundations Webinar
College Board: AP Instructional Support Videos - Session 2 Demonstration Webinar

By Learner Characteristic:

Early Learners
EEC & WGBH: Resources for Early Learning
Education.com: K-5 Learning Library with Thousands of Games, Lessons, and Worksheets
Boston Children's Museum: STEM Sprouts Teaching Guide
Seeds of STEM: PreK-2 Resources from WPI
Peep and the Big Wide World: Parent and Family Resources
National Association for the Education of Young Children (NAEYC): Early Ed Resources for Parents
Bright Horizons: STEM Learning Resources & Ideas for Kids
BrainPop
Early Math - Birth to 3rd Grade - Learning and Teaching with Learning Trajectories
Notice and Wonder Walks: Learn about the World Around You
STEM Activities for Kids - Science Buddies
Virtual Science Education Resources - Phenomena for NGSS
K-5: Boys and Girls Club Offers "My Future, Digital Tools from Digital Literacy to Computer Science"
K-5: MakerHaven - Activities for Home-Based Student Projects
The Early Science Initiative: Resources and Networks for Early Scientists

English Language Learners
PhET: Translated Interactive Math and Science Simulations in 93 Different Languages
Mini Science Lessons Translated in Spanish
Mini Science Lessons Translated in Arabic

Learners with Unique Needs
Learning During COVID19: How to Survive Digital Learning with Learning Disabilities