

Educational Resources

STEM Resource Book for Teachers

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Agencies

Subject	Grade	Name	Description
Agriculture	K-12	USDA USDA for Kids	The United States Department of Agriculture, also known as the Agriculture Department, is the U.S. federal executive department responsible for developing and executing federal government policy on farming, agriculture, forestry, and food. USDA recognizes the importance of recruiting, cultivating, and developing the next generation of scientists, leaders, and a highly skilled workforce for food, agriculture, natural resources, forestry, environmental systems, and life sciences. USDA strives to provide effective research, education, and extension activities
Atmospheric Science	K-12	The National Center for Atmospheric Research (NCAR)	The National Center for Atmospheric Research (NCAR) is a federally funded research and development center devoted to service, research and education in the atmospheric and related sciences.
Atmospheric Science	K-12	National Weather Service	The National Weather Service provides weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.
Atmospheric Science	K-12	NOAA in your State	State by State listings of NOAA facilities, staff, programs, or activities based in, or focused on, your state or territory. Each file will open as a MS Word document.
Atmospheric Science	K-12	National Weather Service	The National Weather Service is a component of the National Oceanic and Atmospheric Administration.
Biomedical	K-12	National Institutes of Health (NIH)	The National Institutes of Health is a biomedical research facility which is responsible for biomedical and health-related research. It provides varieties of resources for students and teachers.
Chemistry	K-12	American Chemical Society (ACS)	ACS is a congressionally chartered independent membership organization which represents professionals at all degree levels and in all fields of chemistry and sciences that involve chemistry.
Earth and Space	K-12	NASA	NASA is a United States government agency that is responsible for science and technology related to air and space. The Space Age started in 1957 with the launch of the Soviet satellite Sputnik. NASA was created in 1958. The agency was created to oversee U.S. space exploration and aeronautics research.
Energy	K-12	U.S. Department of Energy	Energy Department supports science education through educational online content, resources for parents and teachers, internships and student partnership programs, and national events like Solar Decathlon and the National Science Bowl .

Energy	K-12	U.S. Department of Energy-Office of Energy Efficiency and Renewable Energy	“Teach and Learn” resources on the importance of green energy including creative lesson plans, labs, projects and other activities for grades K-12 on energy-related topics.
Energy (Nuclear)	5-9	U.S. Department of Energy-Office of Nuclear Energy	<i>The Harnessed Atom</i> is a new middle school science, technology, engineering, and math (STEM) curriculum extension that focuses on nuclear science and energy. It offers teachers accurate, unbiased, and up-to-date information on the roles that energy and nuclear science play in our lives. The curriculum includes essential principles and fundamental concepts of energy science.
Energy	K-12	U.S. Energy Information Administration	Energy Kids has resources for students. It also has an extensive teacher guide which provides energy lessons that use this website as a resource. The guide provides Language Arts, Math, Performing Arts, Science and Social Studies extension activities by age levels: Primary (P), Elementary (E), Intermediate (I), and Secondary (S).
Environmental Science	K-12	Environmental Protection Agency (EPA)	The United States Environmental Protection Agency (EPA or sometimes USEPA) is an agency of the U.S. federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress. EPA's research mission is to conduct leading-edge research and foster the sound use of science and technology.
Food Science	K-12	Food Safety	A direct link to both FDA and USDA resources about food safety.
Health Sciences	K-12	National Institutes of Health	The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the nation’s medical research agency providing resources for teachers and students.
Science	K-12	National Science Foundation	The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."
STEM	K-12	U.S. Government	USA.gov , Kids.usa.gov is the official kids' portal for the U.S. government. It links kids, parents and teachers to information and services on the web from government agencies, schools, and educational organizations, all geared to the learning level and interest of kids. Kids.usa.gov is organized into four audiences: Kids (Grades K-5) , Teens (Grades 6-8) , Teachers and Parents . Each audience tab is divided into educational subjects like Arts, Math, and History.

Science and Technology	9-12	Science and Technology Directorate	The DHS Science and Technology Directorate (S&T) is the primary research and development arm of the Department of Homeland Security and manages science and technology research, from development through transition, for the Department's operational components and first responders to protect the homeland.
Technology	K-12	National Institute of Standards and Technology (NIST)	A Part of the U.S. Department of Commerce, NIST is one of the nation's oldest physical science laboratories. NIST measurements support the smallest of technologies—nanoscale devices so tiny that tens of thousands can fit on the end of a single human hair—to the largest and most complex of human-made creations, from earthquake-resistant skyscrapers to wide-body jetliners to global communication networks.

Associations

Subject	Grade	Name	Description
Acoustics	K-12	Acoustical Society of America	The premier international scientific society in acoustics, dedicated to increasing and diffusing the knowledge of acoustics and its practical applications.
Aerospace	K-12	The World's Forum for Aerospace Leadership (AIAA)	The world's largest technical society dedicated to the global aerospace profession.
Automation	9-12	Automation Federation	Automation Federation is a recognized global authority on all matters of relevance to automation. Automation Federation has identified the need for an Automation & Engineering Curriculum as a key focus area as the lack of such a program presents a challenge to manufacturing as a whole. They actively work to establish an accredited Bachelor of Science undergraduate degree program in automation that would give students the multi-disciplinary educational and practical background necessary to begin performing automation engineering work in any industry as a more useful employee at the outset.
Biology	K-12	National Association of Biology Teachers (NABT)	The National Association of Biology Teachers (NABT) is the “leader in life science education.” Since its inception in 1938, thousands of educators have joined NABT to share experiences and expertise with colleagues from around the world, keep up with trends and developments in the field, and grow professionally.
Biomedical Engineering Science	K-12	Biomedical Engineering Society	The Biomedical Engineering Society (BMES) is the professional society for biomedical engineering and bioengineering. BMES serves as the lead society and professional home for biomedical engineering and bioengineering.
Botany	K-12	Botanical Society of America	The Botanical Society of America is a membership society whose mission is to promote botany, the field of basic science dealing with the study and inquiry into the form, function, development, diversity, reproduction, evolution, and uses of plants and their interactions within the biosphere.
Chemistry	K-12	American Chemical Society	ACS is a congressionally chartered independent membership organization which represents professionals at all degree levels and in all fields of chemistry and sciences that involve chemistry.

Ecology	K-12	<u>Ecological Society of America (ESA)</u>	The Ecological Society of America (ESA) is a nonpartisan, nonprofit organization of scientists founded in 1915 that promotes ecological science by improving communication among ecologists; raises the public’s level of awareness of the importance of ecological science; increases the resources available for the conduct of ecological science; and ensures the appropriate use of ecological science in environmental decision making by enhancing communication between the ecological community and policy-makers.
Education	K-12	<u>National Education Association (NEA)</u>	The National Education Association (NEA), the nation's largest professional employee organization, is committed to advancing the cause of public education. NEA's 3 million members work at every level of education—from pre-school to university graduate programs. NEA has affiliate organizations in every state and in more than 14,000 communities across the United States.
Engineering	K-12	<u>American Society Engineering Education (ASEE)</u>	ASEE recognizes the role K-12 educators’ play in demonstrating exciting engineering concepts to young people.
Engineering	K-12	<u>American Society of Mechanical Engineers</u>	The ASME Foundation is committed to founding and developing programs that support, create, and advance the field of engineering.
Environmental Science	K-12	<u>Association for Environmental Studies and Sciences (AEES)</u>	The purpose of the Association for Environmental Studies and Sciences (AEES) is to serve the faculty, students and staff of the 1000+ interdisciplinary environmental programs in North America and around the world. The Association works to support the professional development of Association members not just as individuals but also to advance Environmental Studies and Sciences as a whole.
Environmental Science	K-12	<u>North American Associations for Environmental Education (NAAEE)</u>	NAAEE is dedicated to strengthening the field of environmental education and increasing the visibility and effectiveness of the profession. Environmental education (EE) teaches children and adults how to learn about and investigate their environment, and to make intelligent, informed decisions about how they can take care of it. EE is taught in traditional classrooms, in communities, and in settings like nature centers, museums, parks, and zoos.

Geography	K-12	Tennessee Earth Science Teachers (T.E.S.T.)	The Tennessee Earth Science Teachers (T.E.S.T.) is for "all" K-12 teachers who have an interest in the Earth. This association provides opportunities for teachers to network with other teachers across the state, especially through the integration of Earth Science with other sciences and disciplines. TEST members aim to build understanding by sharing activities and learning through workshops, presentations, and field trips.
Marine Biology	K-12	MarineBio Conservation Society	The MarineBio Conservation Society is a nonprofit organization staffed by volunteer marine biologists, students, professors, and conservation specialists. They are deeply committed to the conservation of the ocean and marine life.
Math	K-12	National Council of Teachers of Mathematics (NCTM)	The National Council of Teachers of Mathematics is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development, and research.
Math	K-12	National Math Foundation (NMF)	The National Math Foundation (NMF) is dedicated to empowering communities to work towards the goal of ensuring that ALL Americans, regardless of age, race, socio-economic class, and gender are competent and confident in their math ability and have sufficient skill to be able to use math effectively in their job.
Math	K-12	Association of Mathematics Teachers Educators	The Association of Mathematics Teacher Educators (AMTE) is the largest professional organization devoted to the improvement of mathematics teacher education and professional development of K-12 teachers of mathematics.
Metrology	K-12	American Meteorological Society	Founded in 1919, the American Meteorological Society promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences, and the advancement of their professional applications. AMS publishes eleven atmospheric and related oceanic and hydrologic journals — in print and online — sponsors more than 12 conferences annually, and offers numerous programs and services.
Mineralogy	K-12	Mid-Tennessee Gem and Mineral Society	The Mid-Tennessee Gem and Mineral Society is a non-profit 501(c)(3) educational society dedicated to the study and enjoyment of the earth sciences. It is open to the public for the education of all who wish to attend.
Physics	K-12	American Association of Physics Teachers (AAPT)	AAPT is a strong professional physics science society dedicated to the pursuit of excellence in physical science education.

Physics	K-12	<u>American Physical Society (APS)</u>	The American Physical Society is a non-profit membership organization working to advance and diffuse the knowledge of physics through its outstanding research journals, scientific meetings, and education, outreach, advocacy and international activities.
Statistics	K-12	<u>American Statistical Association (ASA)</u>	The American Statistical Association is the world's largest community of statisticians, the "Big Tent for Statistics."
STEM	k-12	<u>American Association for the Advancement of Science (AAAS)</u>	The American Association for the Advancement of Science is an international non-profit organization dedicated to advancing science.
STEM	K-12	<u>National Action For Minorities in Engineering (NACME)</u>	NACME ensures American competitiveness in a flat world by leading and supporting the national effort to expand U.S. capability through increasing the number of successful African American, American Indian, and Latino women and men in science, technology, engineering, and mathematics (STEM) education and careers.
STEM	K-12	<u>American Association of University Women (AAUW)</u>	The American Association of University Women (AAUW) is the nation's leading voice promoting equity and education for women and girls. AAUW values the importance of supporting girls in science, technology, engineering, and math (STEM). as part of our mission to break through barriers for women and girls. Their research, policy, and nationwide programs encourage members to work from their own communities to ensure that we reach equity in these important fields.
STEM	K-12	<u>National Science Teachers Association (NSTA)</u>	The National Science Teachers Association (NSTA) is the largest organization in the world committed to promoting excellence and innovation in science teaching and learning for all. They are dedicated to improving science instruction and increasing public awareness of science education.
STEM	K-12	<u>TN STEM Ed Leadership Council</u>	The TN STEM Education Leadership Council began in December 2007 as leaders in STEM education from across Tennessee providing the impetus to create a council to inform policy related to STEM. The full council membership consists of representatives from community colleges, private universities, and key leaders in STEM professional communities who are engaged in educational initiatives.

Technology	K-12	<u>International Society for Technology in Education</u>	The International Society for Technology in Education (ISTE®) is the premier nonprofit organization for educators and education leaders committed to empowering connected learners in a connected world. Home to the ISTE Conference and Expo and the widely adopted ISTE Standards for learning, teaching and leading in the digital age, the association represents more than 100,000 professionals worldwide.
Technology	K-12	<u>International Technology and Engineering Educators Association</u>	The International Technology and Engineering Educators Association (ITEEA) is the professional organization for technology, innovation, design, and engineering educators. Our mission is to promote technological literacy for all by supporting the teaching of technology and promoting the professionalism of those engaged in this pursuit. ITEEA strengthens the profession through state and national legislative efforts, professional development, membership services, publications, and classroom activities.
Technology	K-12	<u>The Association of Science-Technology Centers (ASTC)</u>	The Association of Science-Technology Centers (ASTC) is a 501(c)3 nonprofit organization of science centers and museums dedicated to furthering public engagement with science among increasingly diverse audiences. ASTC encourages excellence and innovation in informal science learning by serving and linking its members worldwide and advancing their common goals.
Technology	K-12	<u>Institute of Electrical and Electronics Engineers (IEEE)</u>	The Institute of Electrical and Electronics Engineers is a professional association dedicated to advancing technological innovation and excellence. IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity.
Technology and Engineering	K-12	<u>International Technology and Engineering Educators Association</u>	The International Technology and Engineering Educators Association (ITEEA) is the professional organization for technology, innovation, design, and engineering educators. Our mission is to promote technological literacy for all by supporting the teaching of technology and promoting the professionalism of those engaged in this pursuit. ITEEA strengthens the profession through state and national legislative efforts, professional development, membership services, publications, and classroom activities.

Competitions

Subject	Grade	Name	Description
Aerospace	6-12	Team America Rocketry Challenge	TARC is the world's largest rocket design launch contest with approximately 7,000 students participating each year. It is sponsored by the Aerospace Industries Association (AIA) and the National Association of Rocketry in partnership with AAPT, DoD, NASA, and AIA member companies. The goal is to encourage middle school and high school students in their science and math studies and to consider advanced study of these fields in college and beyond.
Agriculture	9-12	The National FFA Agriscience Fair	The National FFA Agriscience Fair is a competition for FFA members who are interested in the science and technology of agriculture. Students can compete in the national agriscience fair in one of six categories: <ul style="list-style-type: none"> •Animal Systems •Environmental Services/Natural Resource Systems •Food Products and Processing Systems •Plant Systems •Power, Structural and Technical Systems •Social Systems The competition is held each year during the National FFA Convention.
Biotechnology	9-12	International BioGENEius Challenge	For high school students only; recognizes outstanding research in biotechnology. Process is state, regional, international—all held by sanofi-aventis. Top prize is a \$7,500 cash award.
Chemistry	9-12	Chemistry Olympiad	The U.S. National Chemistry Olympiad and the International Chemistry Olympiad are multi-tiered competitions that bring together the world's most talented high school students to test their knowledge and skills in chemistry. Nations around the world conduct examinations to — nominate the most high-performing students for the International Chemistry Olympiad.
Chemistry	5-8	You be the Chemist Challenge®	You Be The Chemist Challenge® which is provided through the Chemical Educational Foundation. This is a national academic science competition where students in grades 5-8 are quizzed on various chemistry concepts in a format that both educates and entertains.

Cybersecurity	9-12	CyberPatriot	The CyberPatriot National Youth Cyber Education Program was created by the Air Force Association to inspire high school students toward careers in cybersecurity or other science, technology, engineering, and mathematics (STEM). At the core of the CyberPatriot program is the National Youth Cyber Defense Competition, which challenges teams of students to resolve real-life cybersecurity situations in a virtual environment.
Energy	3-8	America's Home Energy Education Challenge	Sponsored by DOE and administered by the National Science Teachers Association, the Challenge is designed to 1) educate students across the United States in grades 3-8 about energy and the benefits of energy efficiency, 2) teach students to recognize that lowering their home energy use saves money and 3) engage students and their families in a save energy, save money initiative.
Energy	6-8	National Junior Solar Sprint/Hydrogen Fuel Cell Car Competitions	This DOE program challenges student teams in grades 6-8 to construct model solar and hydrogen fuel cell cars and race them.
Engineering	4-12	Cumberland Plateau Regional Science & Engineering Fair	Tennessee Tech University hosts the Cumberland Plateau's regional science and engineering fair. Students in the 4th through 12th grades from 16 eligible counties compete in the fair. Senior division winners from the regional fair go on to compete at the international level in the yearly International Science & Engineering Fair (ISEF), sponsored by Intel.
Engineering	6-12	Google Science Fair	The Google Science Fair is a global online science and technology competition open to individuals and teams from ages 13 to 18.
Engineering	6-12	Southern Appalachian Science and Engineering Fair	The Southern Appalachian Science and Engineering Fair is the premier science competition for students in middle and high school in our 23-county service area of East Tennessee. The fair is sponsored by the University of Tennessee and many local companies and agencies. There are two divisions of competition - Junior Division for middle school students' grades 6 - 8, and Senior Division for high school students' grades 9 - 12.

Engineering	7-12	<u>FIRST Tech Challenge</u>	In this competition, students and their coaches or mentors build robots based on sound engineering principles and design them to battle robots built by other competitors. A kit is provided for those who want to use one. Competitions are held around the country, and awards are given based on robot design, performance, community outreach, and other accomplishments. The winners of these competitions proceed to the competition's World Championship. For Grades 7-12.
Engineering	9-12	<u>Intel International Science and Engineering Fair</u>	The Intel International Science and Engineering Fair, a program of the Society for Science and the Public, is the world's largest precollege science fair competition. Each year, more than 7 million high school students from around the world compete in local science fairs with the dream of reaching Intel ISEF. Only 1,500 young innovators become finalists and are invited to attend the event to share ideas, showcase cutting-edge research, and compete for over \$4 million in awards and scholarships. More than 1,000 science, engineering, and industry professionals volunteer at Intel ISEF to judge the student projects and award prizes.
Engineering	9-12	<u>Real World Designing Challenge</u>	This annual event provides high school students, grades 9-12, the opportunity to work on real world engineering challenges in a team environment.
Environmental Science	K-12	<u>Siemens We Can Change the World Challenge</u>	The Siemens We Can Change the World Challenge encourages K-12 student teams to identify an environmental issue that has global impact and to provide a viable, replicable solution. Teams must select an environmental topic relating to energy, biodiversity, land management, water conservation, cleanup, and/or air and climate. Top prizes will include thousands of dollars in scholarship money and more!
Environmental Science	K-12	<u>Igniting Creative Energy</u>	The Challenge has encouraged K-12 students to share their ideas and actions about energy and the environment. Student entries must demonstrate an understanding of what an individual, family or group can do to make a difference in their home or community. Students express their ideas through creative means including artwork, science projects, essays, stories, music, video, websites, service projects, and more.

Environmental Science	6-8	Council of Educational Facility Planners, International (CEFPI) Design Competition	This annual competition, open to middle school students, challenges students to design their schools to enhance learning, conserve resources, be environmentally responsive, and engage the surrounding community.
General Science	K-12	ExploraVision	A science competition for K-12 students that goes beyond the typical student science competition and into what it takes to bring ideas to reality. A teacher will sponsor and lead his/her students as they work in groups of 2 – 4 to simulate real research and development. A teacher will guide his or her students as they pick a current technology, research it, envision what it might look like in 20 years, and describe the development steps, pros & cons, and obstacles. Past winners have envisioned technologies ranging from a hand-held food allergen detector to a new device to help people who have lost limbs regain movement in real time.
Math	6-8	AMC 8	The AMC 8 is a 25 question, 40 minute multiple choice examination in middle school mathematics designed to promote the development and enhancement of problem solving skills. The contest is held in November every year.
Math	9-12	AMC 10/12	The AMC 10 is a 25 question, 75 minute multiple choice examination in secondary school mathematics containing problems which can be understood and solved with algebra and geometry concepts. Two different versions of the contests are given on two dates, about two weeks apart, in February. Each AMC 10 and the AMC 12 contest contain about 12 of the same math problems.
Neuroscience	K-12	Brain Awareness Video	Demonstrate neuroscience concept through animation, song, skit, or any other creative approach and submit your video for a chance to win \$1,000
Physics	9-12	U.S. Physics Team	Each year, AAPT and the American Institute of Physics (AIP) sponsors a competition for high school students to represent the United States at the 2014 International Physics Olympiad Competition. The mission of the U.S. Physics Team Program is to promote and demonstrate academic excellence through preparation for and participation in the International Physics Olympiad.

Physics	9-12	AAPT Physics Bowl	Each year, approximately 10,000 students take a 40-question, 45-minute timed, multiple-choice test under their school's supervision. Each Division has 14 regions that have been established across the country to allow schools in each region to compete against one another. Specialized math and science schools compete in their own region.
Physics	9-12	International Physics Olympiad	An annual global physics competition for secondary students.
STEAM	6-12	STEM Video Game Challenge	The Challenge was launched in September of 2010 at the White House by President Obama. The National STEM Video Game Challenge is a multi-year competition that aims to motivate interest in STEM learning among America's youth by tapping into students' natural passion for playing and making video games.
STEAM	6-12	The DuPont Challenge© Science Essay Competition	The Challenge helps to increase science literacy among students and motivates them to excel in communicating scientific ideas. Students in grades 7–12 are asked to write a 700- to 1,000-word essay in one of four categories: food, energy, protection, or innovation. Prizes include U.S. Savings Bonds and a special awards trip to the Walt Disney World® Resort and the Kennedy Space Center. Teachers advising winning students receive a cash grant, the awards trip, and an expenses-paid trip to the NSTA National Conference on Science Education.
STEAM	9-12	HS Physics Photo Contest	This contest has provided teachers and students an opportunity to learn about the physics behind natural and contrived situations by creating visual and written illustrations of various physical concepts. Students compete in an international arena with more than 1,000 of their peers for recognition and prizes. There is a limit to 15 entries per school year. Categories include: natural photos, contrived photos, photos with multiple images.
STEM	K-12	Science Olympiad	Science Olympiad provides rigorous, standards-based challenges to nearly 7,000 teams in 50 states. At the K-6 level, an Elementary Science Olympiad (ESO) program, which can come in the form of a competitive tournament, a hands-on science Fun Day or an expert-filled Science Olympiad Fun Night. In grades 6-12, Science Olympiad functions much like a football or soccer team, requiring preparation, commitment, coaching and practice throughout the year. Each school-based team is allowed to bring 15 students who cross-train for a variety of events in their skill set.

STEM	6-8	eCYBERMISSION	As of one of the US Army's Educational Outreach Programs (AEOP), eCYBERMISSION is a free, web-based STEM competition for students in grades 6 through 9. eCYBERMISSION challenges students to think about real-world applications of STEM by working in teams to identify a problem in their community and use scientific practices or the engineering design process to find a solution. Students compete for state, regional, and national awards, with potential winnings of up to \$8,000 (maturity value) in U.S. Savings Bonds.
STEM	6-8	Broadcom MASTERS	The national science, technology, engineering, and math competition for U.S. 6th, 7th, and 8th graders, the Broadcom MASTERS (Math, Applied Science, Technology, and Engineering for Rising Stars), a program of Society for Science & the Public, inspires and encourages the nation's young scientists, engineers and innovators.
STEM	6-12	The U.S. Department of Energy (DOE) National Science Bowl	The U.S. Department of Energy (DOE) National Science Bowl is a nationwide academic competition that tests students' knowledge in all areas of science. High school and middle school students are quizzed in a fast-paced question-and-answer format similar to Jeopardy. Competing teams from diverse backgrounds are made up of four students, one alternate, and a teacher who serves as an advisor and coach.
STEM	9-12	Siemens Competition	The Siemens Competition in Math, Science, and Technology, the nation's premier science research competition for high school students.
STEM	9-12	Junior Science and Humanities Symposia (JSHS) Program	The JSHS program is designed to challenge and engage students (grades 9-12) in science, technology, engineering, and mathematics (STEM). Individual students compete for scholarships and recognition by presenting the results of their original research efforts before a panel of judges and an audience of their peers. Opportunities for hands-on workshops, panel discussions, career exploration, visits to research labs, and networking are part of the program.
STEM	9-12	What If? Live Student Design Challenge	What If? Challenge sponsored by NASA and the Ahora Foundation of Plano, Texas is the worldwide contest, in which 14- to 18-year-old students will design experimental propulsion systems using materials that are cheap and easy to get. The Challenge is designed to excite students about science, technology, engineering and mathematics.

Technology	K-12	Toshiba/NSTA ExploraVision Science Competition	ExploraVision is a science competition that allows students to research a current technology and predict how it might evolve in 20 years. Led by a teacher sponsor, teams of two to four students describe the development steps, the pros and cons of the technology, and any obstacles they see in future development. The competition is open to public, private, or homeschooled K–12 students in the United States and Canada of all interest and ability levels. Connected to the NGSS, students will fully engage in scientific and engineering processes that relate to solving real-world problems.
Technology	K-5	FIRST LEGO League	Elementary and middle school students get to: <ul style="list-style-type: none"> •Design, build, test, and program robots using LEGO® MINDSTORMS® technology. •Apply real-world math and science concepts. •Research challenges facing today’s scientists. •Learn critical-thinking, team-building, and presentation skills. •Participate in tournaments and celebrations.
Technology	6-8	Junior FIRST LEGO League	For children ages 6-9, Junior FIRST® LEGO® League (Jr.FLL®) captures young children's curiosity and directs it toward discovering the wonders of science and technology. This program features a real-world scientific concept to be explored through research, teamwork, construction, and imagination. Guided by adult Coaches, teams use LEGO® bricks to build a model that moves and develop a Show Me Poster to illustrate their journey.

E - Resources

Subject	Grade	Name	Description
Agriculture	K-12	National Agricultural Library	The National Agricultural Library is one of four national libraries of the United States and houses one of the world's largest collections devoted to agriculture and its related sciences.
Agriculture Science	K-8	4-H	The 4-H offers agricultural curriculum and educational kits (fee-based)
Agriculture Science	PreK-12	Agriculture in the Classroom (AIRC)	Agriculture in the Classroom programs supports state programs by providing a network that seeks to improve agricultural literacy — awareness, knowledge, and appreciation — among PreK-12 teachers and their students.
Astronomy	6-12	Amazing Space	Formal Education Group of the Space Telescope Science Institute's promoting the science and majestic beauty of the universe for use in the classroom. The developed materials for educators and learners of all ages are accurate, classroom-friendly, visually appealing, and carefully crafted to adhere to accepted educational standards. By producing and sharing classroom resources based on the Hubble Space Telescope's greatest discoveries.
Astronomy	K-12	NOAA Education Resources	This portal is designed to assist educators in accessing these materials from one centralized interface. Materials selected for this site are organized by Themes, topical Collections, and content type that are aligned with common teaching topics and expressed needs of educators. Linked resources are organized into Collections which provide the user with a toolkit of materials and activities suitable for integration into a variety of educational settings. Collections are not grade specific but resources are labeled for grade appropriateness where applicable. Additional NOAA resources which support educator professional development, academic scholarship, career exploration, and education grants are also available. All materials linked from this site are free for use and distribution unless expressly noted.
Atmospheric Science	6-12	Earth System Research Laboratory (ESRL) Global Monitoring Division	NOAA/ESRL's Global Monitoring Division conducts sustained observations and research related to source and sink strengths, trends and global distributions of atmospheric constituents. The teachers resources for Carbon Cycle Toolkit include: lesson plans, student activities, references, videos, glossary of terms

Atmospheric Science	6-12	NOAA Education Resources Portal	This portal is designed to assist educators in accessing materials from one centralized interface. Types of Content: Multimedia (videos, images, interactive media, and graphics which assist in the understanding of the Collection topic), Lessons & Activities, Real World Data Background (general materials), Career Profiles (video and narratives of scientists and resource managers who interact with the Collection topic as part of their work with NOAA. Articles (technical material on new findings, methods, or unique aspects of NOAA's activities related to the Collection topic).
Atmospheric Science	6-12	Zooniverse	Internet's largest, most popular and most successful citizen science projects. Its nearly 275,000 users collect data on well-defined research questions, from solar storm formation to tracking tropical cyclones and from seafloor exploration to characterizing whale sounds.
Atmospheric Science	K-12	Spark Science Education	Spark engages people in the wonder and relevance of science. The National Center for Atmospheric Research (NCAR) sits nestled against Boulder, Colorado's famous Flatirons and the foothills to the Rocky Mountains. NCAR welcomes the public seven days a week to its Visitor Center, which offers exhibits, guided tours, and audio tours.
Chemistry	6-12	ChemEd DL Chemical Education Digital Library	A large collection of digital resources, tools and online services for learning chemistry.
Chemistry	K-12	ACS Chemistry Educational Resources	Provides K-12 chemistry teachers with specialized chemistry teaching resources, online community for sharing strategies, and more.
Climatology	6-12	Climate Literacy and Energy Awareness Network (CLEAN)	Collection of educational resources about climate and energy science. It provides a forum for organizations, agencies, and individuals to collaborate for climate education. Members share ideas, coordinate efforts, promote policy reform, develop learning resources, and support integration of climate literacy into formal and informal education venues. Initiatives of CLEAN Network feature accurate scientific information, engaging learning experiences, and multiple pathways to reach broad and diverse audiences, in both formal and informal venues.
Climatology	6-12	Climate Portal	NOAA Climate.gov provides resources for teaching about climate and energy, a source of timely and authoritative scientific data.

Climatology	K-8	Cool the Earth	Cool The Earth is a free, ready-to-run climate change assembly program that educates K-8 students and their families about climate change and inspires them to take simple actions to reduce their carbon emissions.
Education/Research	K-12	SweetSearch	Sweet Search is an educational search engine where all the websites and content that is suggested has been evaluated by a research department for educational content. A simple way to help reduce extraneous search results, especially helpful with Middle School students who are often doing their first large online research assignments. This is a great resource for all subject areas and all students to use.
Energy	6-12	KidWind Project (Renewable Energy)	KidWind has been a leader in renewable energy education and guiding the delivery of green STEM education. The standards-based educational tools explore the science and technology of wind, solar, and other forms of renewable energy and their impact on the environment. Students and teachers are invited to browse through countless short videos, PowerPoint presentations, hands-on lessons, and student-friendly online reading that will get you started learning about renewable energy.
Engineering	K-8	Engineering is Elementary (EIE)	Engineering is Elementary supports educators and children with curricula and professional development that develop engineering literacy. The EIE Project helps children in grades 1-8 develop engineering and technological literacy.
Environmental Science	K-12	Environmental Science Resources	Environmental Science Resources offers middle level to high school environmental science teachers a diverse collection of activities, PowerPoint presentations, worksheets, and labs covering everything from environmental history and laws to environmental toxins and energy use. Click on Current Events Articles to access a custom database of recent environmental news briefs from reliable sources, including National Geographic, BBC News, The New York Times, and Discover Magazine.
Environmental Science	K-12	Estuary Education National Estuarine Research Reserve System	Estuaries.noaa.gov helps educators bring the beauty and the importance of estuaries into classrooms and educational programs. This site provides, primarily, an avenue for elementary, middle and high school students, and their teachers, to learn more about estuaries, research, and explore NOAA's "living laboratories" - the National Estuarine Research Reserves.

Environmental Science	K-12	Scientists in the Field	The Scientists in the Field series shows people immersed in the unpredictable and dynamic natural world, making science more accessible, relevant, and exciting to young readers. Far from the research laboratory, these books show firsthand adventures in the great outdoors—adventures with a purpose. From climbing into a snake den with thousands of slithering snakes to tracking wolves, swimming with hammerhead sharks, and collecting bugs, readers experience the thrill of discovering the unknown. The Scientists in the Field series has been deemed consistently excellent, imaginative, engaging, and informative. The series provides a broad range of curricular opportunities that will both teach and entertain children.
Environmental Science	PreK-6	NIEHS Kids Page	Targeted primarily for grades PreK–6, the Kids’ Pages at NIH’s National Institute for Environmental Health Science have something for everyone interested learning more about environmental health. Young students (PreK–2) can learn through songs, games, stories, and coloring pages that introduce concepts such as helping the environment and staying healthy. For older students (grades 3-6) Scientific Kids provides access to experiments, activities, and fun quizzes that broaden understanding of environmental health issues. For example, students can do an experiment that shows how water moves things through the body, make a model of how the lungs work, or solve riddles about famous scientists in the A Party of Puzzles quiz. The site also offers resources for teachers and parents, including fact sheets, links for further learning.
Food Science	6-12	FDA Education Resource Library	These materials are intended for educators, teachers, dietitians and health professionals as well as for general consumer education. Educational Materials include: cosmetics, dietary supplements, food safety, nutrition and labeling, product specific, videos and interactive media. Materials are available in PDF format for immediate download and may also be ordered in larger quantities using the CFSAN Publication Order Form.

Food Science	K-12	FDA Educational Materials for Students & Teachers	FDA's Center for Food Safety and Applied Nutrition (CFSAN) Education Resource Library is a compilation of printable educational materials on topics related to food safety, nutrition (including labeling and dietary supplements) and cosmetics. These materials are intended for educators, teachers, dietitians and health professionals as well as for general consumer education. Materials are available in PDF format for immediate download and may also be ordered in larger quantities.
Food Science	K-12	FightBack Partnership for Food Safety Education	A one-of-a-kind nonprofit that brings together public and private sectors to support health and food safety educators by making their work more visible, collaborative, and effective. The Partnership works with an active network of 14,000 health and food safety educators, providing them with tools they can use to educate people about protecting their health through safe food handling and hygiene.
Food Science	K-12	Food Safety and Nutrition Education	The FDA/NSTA Professional Development Program in Food Science is a sustained development opportunity for middle level and high school science, health, and family and consumer science (FACS) teachers. Science and Our Food Supply is a free curriculum kit appropriate for middle level and high school classes. This inquiry-based curriculum, developed jointly by the FDA and NSTA, introduces students to the fundamentals of microbiology through in-depth lessons and activities that are arranged in an easy-to-use, modular format. The curriculum can easily be incorporated into your biology, life science, food, health and nutrition classes.
Food Science	K-5	Bad Bug Book	A condensed version of FDA's "Bad Bug Book". For more details on any of the organisms listed, or to find out about other organisms.
General Science	K-8	Science for Kids	Science Kids is the home of science & technology on the Internet for children around the world. This website offers a lively collection of experiments, facts, games, activities, lessons, images, quizzes, videos, and science fair project ideas. Targeted for elementary and middle level students, but also useful to teachers, resources are searchable by topic and by type.
Geography	K-16	USGS Education	This Web site contains selected USGS educational resources in many scientific areas that may be useful to K-16 educators. Many of these resources can be used directly in the classroom or will be

			useful in classroom lessons or demonstration activities preparation, or as resources for teacher education and curriculum development.
Geography	PreK-8	Cengage Learning	National Geographic Learning is a partnership between the National Geographic Society and Cengage Learning, a leading educational publisher of school, higher education, English Language Teaching, library and reference materials.
Geology	K-12	TN Water Resources Science Center	U.S. Geological Survey (USGS) Tennessee Water Science Center Web site; this is your direct link to all kinds of water-resource information. Here you will find information about Tennessee's rivers and streams. You will also find information about ground water, water quality, and many other topics. The USGS operates the most extensive satellite network of stream-gaging stations in the State, many of which support flood-warning systems. The USGS provides current (real-time) stream stage and stream flow, water-quality, and ground-water levels for more than 200 sites in Tennessee.
Geology	K-12	USGS Education	USGS Education home page now has a permanent link to "myScience", a collection of USGS Citizen Science websites. Your students can contribute to national databases by collecting information on earthquakes, landslides, volcanic ash, phenology, birds, stream flow, and crickets. Educational resources include grades K-16.
Health Science	6-12	Excellence in Curriculum Innovation through Teaching Epidemiology and the Science of Public Health (Excite)	EXCITE! is a collection of teaching and reference materials developed by the Centers for Disease Control and Prevention (CDC) to introduce and excite youth from kindergarten through 12th grade about the knowledge and skills utilized by public health professionals. The information presented in EXCITE! includes academic subjects such as life sciences, epidemiology, mathematics, social studies, language arts, and health education. Topics applicable to all levels of instruction include elementary statistical concepts, scientific method of inquiry, and outbreak investigation.
Health Science	K-12	NIH Research and Training	NIH Research and Training site contains resources for teachers and students.
Oceanography	6-12	NOAA Coral Reef Conservation Program	The NOAA Coral Reef Conservation Program (CRCP) brings together expertise from across NOAA for a multidisciplinary approach to managing and understanding coral reef ecosystems including lesson plans, student activities, guides and resources, videos, slide shows.
Optics	K-12	Optics4Kids	Explores optics for kids and adults.

Physics and Math	K-12	PhET Interactive Simulations	Founded in 2002 by Nobel Laureate Carl Wieman, the PhET Interactive Simulations project at the University of Colorado Boulder creates free interactive math and science simulations. PhET sims are based on extensive education research and engage students through an intuitive, game-like environment where students learn through exploration and discovery.
Soil Sciences	K-16	Soil Education	The NRCS has compiled a collection of soil science resources for K–college educators. These include soil science fact sheets, career information, a glossary, lessons, videos and webinars, and links for further learning. Of particular interest are “The Twelve Orders of Soil Taxonomy” poster, which presents color photographs and definitions of 12 soil types and the regions or climates where they are found, and the State Soils web page, which describes soils with particular significance for each state. Teachers can select a grade level (K–6, 7–12, and College) to access links and lesson plans to bring soil science into the classroom.
STEAM	K-12	STEAM Edu	STEAM Education aims to bring FUNctional literacy to all. It promotes bridging the gap between business and educational goals to create a more productive and sustainable global culture based on teamwork. This educational framework is for all disciplines and types of learners. (Fee)
STEM	K-12	AAAS Science Netlinks	Science NetLinks is a FREE science education resources produced by the American Association for the Advancement of Science. The best place to find lessons, interactivities, podcasts, hands-on activities and student-centered materials.
STEM	K-12	Annenberg Learner	Annenberg Learner's mission is to "Advance Excellent Teaching in American Schools." They have pursued this mission for more than three decades by funding and distributing multimedia resources for teachers (K-12 and college levels) to teach their subjects and to stay up-to-date in their fields. They focus on the teacher as a learner, as well as the student as a learner.
STEM	K-12	Discovery Education	Discovery Education transforms classrooms, empowers teachers and captivates students by leading the way in providing high quality, dynamic, digital content to school districts large and small, rural and suburban and everything in between.
STEM	K-12	Fact Monster	This site has links to various references for students, teachers and parents.

STEM	K-12	Hand2Mind	A fully integrated STEM program that covers multiple standards with engaging teacher-friendly hands-on activities.
STEM	K-12	NASA Digital Learning Network	SA's DLN provides free, interactive connections with NASA education specialists and subject matter experts. A variety of science, technology, engineering, and mathematics (STEM) lessons are available through our catalog for K-16 students. You can also watch live and prerecorded, educational webcasts.
STEM	K-12	NeoK12	Neo K12 is a comprehensive collection of educational videos, lessons, and games for students in grades k-12. Neo K12 believes that, “kids learn best by ‘seeing’ the real world.”
STEM	K-12	NOVA Education	The NOVA Education site is a collection of NOVA resources for bringing science, technology, and engineering to life in educational settings. This free digital library is tied to teaching standards and includes video, audio segments, interactive, and much more.
STEM	K-12	Sally Ride Science®	Sally Ride Science® provides tools for college and career readiness that can build students' passion for STEM fields and careers.
STEM	K-12	Science Spin	Science Spin was established in 2003 to provide an independent platform for reporting on science. Science Spin takes a local view of science both at home and abroad, and in this way it is different from international magazines. Their goal is to present science in a way that is accessible, relevant and interesting to all readers. Coverage of science extends from astronomy to zoology, and features are written with both general public and specialists in mind. It is a low cost paid subscription.
STEM	K-12	SciLinks	SciLinks help science educators harness the vast resources of the Internet by connecting key textbook subjects to NSTA-approved web pages that enrich student learning both inside and outside the science classroom. Students can access vetted web pages that provide real-time information and new content on a host of science topics.
STEM	K-12	Sparticl	Sparticl is an essential online destination presenting the best the web has to offer in science, technology, engineering, and math (STEM), available for free and accessible via computers, tables and smartphones.
STEM	K-8	SciGirls	SciGirls is American children’s animated and live-action television series. It's an educational outreach program for elementary and middle-school children based on proven best practices for science, technology, engineering and math

			(STEM) education for girls.
Technology	K-12	Free Technology for Teachers	The purpose of this site is to share information about free resources that teachers can use in their classrooms.
Technology	K-12	National Center For Technological Literacy (NCTL)	The National Center for Technological Literacy® (NCTL®) has been helping to educate children and adults in a variety of educational settings since 2004. This Museum of Science, Boston initiative is active nationwide via partnerships that seek to raise awareness and understanding of engineering in schools and museums.

Instructional Materials

Subject	Grade	Name	Description
Acoustics	K-12	Acoustical Society of America	The premier international scientific society in acoustics, dedicated to increasing and diffusing the knowledge of acoustics and its practical applications.
Agricultural Science	6-12	Curriculum for Agricultural Science Education (CASE)	<p>Curriculum for Agricultural Science Education, CASE, and curricular materials provide a high level of educational experiences to students to enhance the rigor and relevance of agriculture, food, and natural resources (AFNR) subject matter. Besides elevating the rigor of AFNR knowledge and skills, CASE provides purposeful enhancement of science, mathematics, and English language understanding.</p> <p>CASE develops curriculum utilizing science inquiry for lesson foundation and concepts are taught using activity-, project-, and problem-based instructional strategies. In addition to the curriculum aspect of CASE, the project ensures quality teaching by providing extensive professional development for teachers that leads to certification.</p>
Astronomy	6-12	Planetarium	An interactive sky map for astronomy enthusiasts of all ages. More than 1,500 stars—the brightest stars in the night sky (every star with a magnitude up to “+5”)—are visible on the map. Users can adjust the time and viewing location to see the sky from any point worldwide.
Astronomy	K-12	NASA Education	NASA has many opportunities for students and educators. Students, educators and faculty may explore and experience unique space and aeronautics content through NASA's education opportunities. Use the lists below to learn about ways to interact with NASA.
Atmospheric Science	6-12	JetStream - Online School for Weather	JetStream, the National Weather Service Online Weather School is designed to help educators, emergency managers, or anyone interested in learning about weather and weather safety. The information contained in JetStream is arranged by subject; beginning with global and large scale weather patterns followed by lessons on air masses, wind patterns, cloud formations, thunderstorms, lightning, hail, damaging winds, tornados, tropical storms, cyclones and flooding. Interspersed in JetStream are "Learning Lessons" which can be used to enhance the educational experience.

Atmospheric Science	6-8	Data in the Classroom NODE Project	The NOAA Ocean Data Education (NODE) project aims to help by creating three new curriculum modules and online tools for accessing data. The Project is developing curriculum for grades 6-8 designed to help teachers and students use real scientific data to explore dynamic Earth processes and understand the impact of environmental events on a regional or global scale.
Atmospheric Science	9-12	WindMap	A living portrait of surface wind that comes from National Digital Forecast Database. These are near-term forecasts, revised once per hour.
Atmospheric Science	K-6	Student Guide to Climate Change	The Environmental Protection Agency developed A Student's Guide to Global Climate Change to help provide students with clear, accurate information about the causes and effects of climate change—as well as the steps we can all take to help solve the problem. Check out this site for information about climate change and ways to make a difference.
Biology	K-12	Howard Hughes Medical Institute (HHMI)	HHMI seeks to strengthen education in biology and related sciences from elementary school to graduate studies and beyond. The resources are free and include short films, lectures, virtual labs, teacher's guides, and other.
Biotechnology	6-12	Crossing Boundaries Curriculum Resources	Crossing Boundaries students use geospatial technology to analyze biodiversity conservation issues in Brazil, Mexico, Kenya, and New York State. Using wikis, podcasts, and blogs, they collaborate with peers, exchange peer reviews and create presentations.
Botany	K-12	Botanical Society of America	Lab and visual resources for students K-12.
Botany	K-12	Natural Resources Conservation Service Plants	The PLANTS Database provides standardized information about the vascular plants, mosses, liverworts, hornworts, and lichens of the U.S. and its territories.
Chemistry	9-12	Landmark Lesson Plans	The following inquiry-based student activities are designed for use in high school chemistry and history lesson planning. Based on material from the ACS National Historic Chemical Landmarks program, the lessons, reading materials, videos and student activities are designed as ready-to-go lessons, easily implemented by a chemistry teacher or his/her substitute, to supplement a unit of study.

Climatology	K-8	Climate Science Activity Book by NOAA	NOAA introduces middle and high school students to essential principles of climate science. Students explore climate science concepts as they make a solar cooker, set up a home weather station, construct an electronic temperature sensor, create a unique message about climate change, and play the “Are You Climate Literate?” board game. This free activity book is free to download and includes detailed instructions and illustrations.
Education	K-12	Open Culture	This collection provides a list of free educational resources for K-12 students (kindergarten through high school students) and their parents and teachers. It features free video lessons/tutorials; free mobile apps; free audiobooks, EBooks and textbooks; quality YouTube channels; free foreign language lessons; test prep materials; and free web resources in academic subjects like literature, history, science and computing.
Education	K-12	KHAN Academy	Khan Academy is a non-profit educational website created in 2006 by educator Salman Khan to provide "a free, world-class education for anyone, anywhere."
Education	K-12	200 Free Textbooks	Free textbooks (aka open textbooks) written by knowledgeable scholars are a relatively new phenomenon. Below, find a meta list of 200 Free Textbooks, and check back often for new additions.
Education	K-12	Quiz Revolution	An online software allowing to make multimedia about anything in minutes incorporating video, audio and image files.
Energy	6-12	Energy 101 Videos by DOE	Introduction to the fundamental concepts behind renewable energy sources and energy efficiency using the collection of 15 short (about 3 minutes each) videos from the DOE. Titles include Electric Vehicles, Wind Turbines, Geothermal Heat Pumps, Concentrating Solar Power, Biofuels, Algae to Fuels, Hydropower, and others. The videos can be incorporated into multimedia lessons on energy.
Energy	6-12	NOVALABS	NOVA Labs is a digital platform where "citizen scientists" can actively participate in the scientific process. From predicting solar storms and designing renewable energy systems to tracking cloud movements and learning cybersecurity strategies, participants can take part in real-world investigations by visualizing, analyzing, and sharing the same data that scientists use. Each Lab is unique, and focuses on a different area of active research and comes with a collection of free videos that provide the background information.

Energy	K-12	Learning About Renewable Energy	Educational resources from the U.S. Department of Energy’s National Renewable Energy Laboratory help in understanding about the renewable energy sources and technologies. From elementary school science mentoring to senior-level research participant programs, NREL's educational opportunities help provide the link to a clean energy future.
Engineering	6-12	Through my Window	Through My Window is a multimedia engineering education website that engages children and young teens in engineering through the use of narrative in their native digital environment. Through My Window applies approaches to learning that are developmentally appropriate and support deep learning. Learners are immersed in story featuring relevant, culturally diverse characters with whom they interact in novels, graphic novels, and online learning journeys. Through My Window conforms to best practices in program curriculum as well as national standards and curriculum frameworks in STEM and literacy.
Engineering	K-8	Novel Engineering	Inspired by kids and grounded in research, Novel Engineering is an innovative approach to integrate engineering and literacy in elementary and middle school. Students use classroom literature—stories, novels, and expository texts- as basis for engineering design challenges to: <ul style="list-style-type: none"> •Identify engineering problems •Impose constraints by using details from the text •Design functional, realistic solutions for characters •Engage in the Engineering Design Process while reinforcing their literacy skills
Environmental Science	6-12	Forest Service Northern Research Station	Current distributions and modeled future-climate habitats for 134 individual tree species or combined species by geographic areas. The current and modeled distribution of 150 bird species is also presented in the Climate Change Bird Atlas.
Environmental Science	6-8	Conservation Education	Middle school conservation education lesson plans.
Environmental Science	K-12	FSNatureLive	The USDA Forest Service, Prince William Network and partners bring nature learning to through the series of webcasts, webinars, and online education resources.
Food Science	K-3	FIGHT BAC! Partnership for Food Safety Education	This kid-friendly interactive program-targeted to children from Kindergarten through 3rd grade is sponsored by The Partnership for Food Safety Education.

General Science	K-12	OMSI: Explore Science, Science in Action	OMSI provides a variety of online resources for students that allow them to explore various science topics, live science cameras, museum virtual tours, and hands-on science at home.
General Science	K-12	Game for Science	Game for Science is a virtual world for kids dedicated to getting them excited about science and technology. Students can explore various virtual islands where they will learn about health, aeronautics, genomics, environment, engineering, and more. Students can learn about science careers, what scientists do, play games, learn interesting facts, and explore science photos and videos. Game for Science is an outstanding way for kids to get excited about science and technology.
General Science	K-8	Carolina Curriculum: STC Program	With support from an NSF grant, the Smithsonian Science Education Center (SSEC), a division of the Smithsonian Institution, developed The STC™ Program, a basal, science and engineering practices centered program for grades K–10. It is a basal, inquiry-based science curriculum for grades K–10 that covers life, earth, and physical sciences with technology.
Geography, Earth, and Space Science	6-8	NASA Space Place	Free downloadable lesson plans and activities. Multiple topics of geography; earth and space science for students with written information, photos, and simulations.
Geology	6-12	US Topo	US Topo quadrangles are digital topographic maps produced by the National Geospatial Program of the U.S. Geological Survey (USGS). Created in the familiar 7.5-minute quadrangle format like the legacy paper maps, US Topo maps support frequent updating, wide and fast public distribution, and basic, on-screen geographic analysis.
Geology	9-12	USGS Online Lectures	This is a collection of selected videotaped lectures that were given at USGS facilities. All of these lectures should be suitable for viewing by the general public and upper level students (grades 8 through university). Most videos are in MP4 format and are typically 60-90 minutes long (60 minute lecture plus question/answer).
Geology	9-12	USGS The National Map	The U.S. Geological Survey (USGS) offers several mapping products. These maps are computer generated and are uploaded every three years.
Geology	9-12	Map Mysteries	75,000 Ready-To-Go Lesson Plans Teaching Earth Science and Geography with USGS Topographic and Thematic Maps.

Health Science	K-12	NIH Office of Science Education/SEPA	The NIH curriculum supplements are teacher's guides to two weeks of lessons on the science behind selected health topics. They combine cutting-edge biomedical discoveries with state-of-the-art instructional practices. HTML and PDF versions of each supplement are online and accessible to all. Print versions are FREE upon request to educators in the U.S.
Math	6-8	Math Scholastic	The teacher's online companion to Scholastic MATH magazine — combining real-world math and stunning visuals with middle school math skills to help teach Common Core Standards. MATH magazine makes math meaningful and accessible to students by applying core math concepts to high-interest, real-world topics. Every issue is designed to meet the Common Core Standards, with rigorous practice problems modeled on upcoming assessments. With a wealth of digital learning features like videos, games, and leveled practice problems, MATH is your complete print & online math-teaching program.
Math	9-12	Core Math Tools	Core Math Tools is a downloadable suite of interactive software tools for algebra and functions, geometry and trigonometry, and statistics and probability. The tools are appropriate for use with any high school mathematics curriculum and compatible with the Common Core State Standards for Mathematics in terms of content and mathematical practices. Java required.
Math	K-8	AdaptedMind	A revolution in education that will improve the way a child learns math. AdaptedMind is a better way to learn math for your child. It focuses on areas where your child needs help, and lets you know how to get involved.
Math	K-8	Math and Movement	Math & Movement™, founded by math educator Suzy Koontz, is an exciting way for teachers and parents – anyone involved in math education for children – to keep kids feeling good about math. Using simple techniques and fun exercises, you can introduce the fundamentals of arithmetic and early algebra concepts to children of all ages. Our techniques have been used successfully with children as young as pre-school and as old as the high school years. Our activities are fun for math learners, and build on extensive brain research together with practical field testing.

Ornithology	K-12	BirdSleuth	BirdSleuth is an inquiry-based science curriculum that engages kids in scientific study and real data collection through the Cornell Lab of Ornithology's exciting citizen science projects. BirdSleuth provides educators with kits that: <ul style="list-style-type: none"> ■ Encourage kids to answer their own questions about nature using the scientific process ■ Spend time outdoors, connecting with nature by focusing on the fascinating sights, sounds, and behaviors of birds ■ Motivate kids by the real-world importance of the data they enter online, which scientists use to understand and conserve birds.
Ornithology	K-12	Cornell Lab of Ornithology Physics of Animal Behavior	Curriculum resources for elementary, middle, and high school engage students in investigating questions about how birds and other animals can do things such as produce a complicated song or glide long distances. The lessons use rich media including sounds and videos to spark student interest in understanding the physics underlying biological adaptations. Teachers can download individual lessons or units addressing science standards about waves, forces, and motion.
Physics	6-12	Physics Central	PhysicsQuest is a story-based activity that exposes middle school students to the fun and relevance of science. APS provides a free PhysicsQuest kit to registered 6-9th grade physical science classes, home school groups, science clubs, and after-school programs. The kit includes a user's manual and materials for four physics experiments.
Physics	9-12	Free Physics Resources	This website boasts a varied collection of resources for high school physics teachers and students. Educators can access documents, labs, warm-up questions, and a great end-of-course question bank. In addition, the site has video tutorials exploring topics like the Meissner Effect, velocity, kinetic energy, and vector and scalar measurements. A section with physics-themed crossword puzzles could be used as topic review.
Physics	K-5	Physics Central	Color Me Physics is a coloring book that introduces children to physics and some of its most famous characters. The book includes one coloring page and a short description for each of the ten physicists featured. Color Me Physics may be reproduced for non-commercial purposes.
Statistics and Math	K-12	American Statistical Association	The STatistics Education Web (STEW) is an online resource for peer-reviewed lesson plans for K-12 teachers. The web site is maintained by the ASA and accessible to K-12 teachers throughout the world.
STEAM	K-12	STEAM Edu	STEAM Activity Lesson Plans notes to download.

STEM	6-12	NOVALABS	NOVA Labs is a new digital platform where "citizen scientists" can actively participate in the scientific process. From predicting solar storms and designing renewable energy systems to tracking cloud movements and learning cybersecurity strategies, NOVA Labs participants can take part in real-world investigations by visualizing, analyzing, and sharing the same data that scientists use. Each Lab is unique, and focuses on a different area of active research. Each Lab comes with a collection of free videos that provide the background information necessary for students to succeed in the Lab's research challenge.
STEM	6-12	CINCH Learning	CINCH learning provides convenient cloud-based access to quality math and science content grades 6-12 along with planning and assessment tools. It is a paid platform.
STEM	6-12	GLEAN Video Library	More than 14,000 FREE educational videos for high school students and teachers in science and math, including biology, algebra, geometry, and chemistry. The videos address a wide range of topics within each subject. For example, the biology videos cover topics such as the biosphere, DNA, cell structure and function, plants, genetics, and foundations of biology. Users who join the community and complete a profile receive personalized content, such as videos that match their preferred learning styles, encouraging self-directed learning.
STEM	9-12	MIT Blossoms	BLOSSOMS Video Library contains over 50 math and science lessons, all freely available to teachers as streaming video and Internet downloads and as DVDs and videotapes. The Blossoms modules are ready made for use in the classroom.
STEM	9-12	Synaptic Global Learning	Series of Advanced Placement MOOCs, which are targeted towards high school students who will be preparing for AP ® examinations. Through the series, students will be able to: <ul style="list-style-type: none"> • Help more students gain proficiency overall in both STEM and other courses. • Attract more students to STEM Careers. • Broaden the representation of under-represented groups. • Increase technological, quantitative, and scientific literacy. • Leverage our innovative technology to assist millions of students nationwide.

STEM	K-12	Project Lead the Way (PLTW)	Project Lead The Way (PLTW) is the nation's leading provider of K-12 STEM programs. This world-class curriculum and high-quality teacher professional development model, combined with an engaged network of educators and corporate and community partners, help students develop the skills necessary to succeed in our global economy.
STEM	K-12	Discovery Education STEM Camp	STEM Camp is a series of standards-aligned curricula available to schools, districts, nonprofit organizations, and parents for use in summer camps, after-school learning opportunities, and other educational programs. The content centers on water, urban infrastructure, and energy and includes hands-on and virtual labs, engineering challenges, digital investigations, interactive videos, and career connections designed to inspire primarily middle and high school students in learning about STEM subjects.
STEM	K-12	AAAS Science Mag Multimedia Center	Science Multimedia Center offers a variety of special features with a multimedia bent, to provide access to science not only in words but also in images, sound, and motion. Most of the material accessed from this gateway is free to all users of the site.
STEM	K-12	Science Books and Films (SB&F)	Published by the American Association for the Advancement of Science (AAAS), SB&F is online global critical review journal devoted exclusively to print and nonprint materials in all of the sciences for all age groups (K-college, teaching and general audience). In an online-only format, SB&F offers thousands of books, DVD's, websites, and software packages.
STEM	K-12	It's About Time	It's About Time®; provides the resources and technology to support the implementation of a successful Science, Technology, Engineering, and Mathematics (STEM) curriculum. Project-based curricula, developed by education thought leaders, through funding from the National Science Foundation (NSF), will motivate your students to achieve the 21st century skills they need for a bright future.
STEM	K-12	BKFK For Educators	BKFK creates free educational materials that supplements existing curricula.

STEM	K-12	The Concord Consortium	The Concord Consortium offers a collection of tablet-friendly models exploring physics, chemistry, biology, math, and Earth and space science concepts. Many concepts are interdisciplinary, so the models appear in multiple discipline categories. Selected titles include Intermolecular Attractions and States of Matter; Diffusion of a Drop; Sunlight, Infrared, CO ₂ , and the Ground; and Metal Forces.
STEM	K-6	Siemens Science Day	The Siemens Science Day website offers a variety of tools and resources that will help reinvent science class including original hands-on activities and supporting videos, a teacher support center with best practice guides, monthly themes and an Ultimate Cool School sweepstakes.
Technology	K-12	Game for Science	Game for Science is a virtual world for kids dedicated to getting them excited about science and technology. Students can explore various virtual islands where they will learn about health, aeronautics, genomics, environment, engineering, and more. Students can learn about science careers, what scientists do, play games, learn interesting facts, and explore science photos and videos. Game for Science is an outstanding way for kids to get excited about science and technology.
Technology	K-12	Punflay	Punflay is Emantras' educational and consumer application development arm for K-12, which focuses on creating fun gaming applications for young learners. It specializes in interactive educational games for iPods, iPhones, iTouches and online.
Technology	K-12	McGrawHill Center for Digital Innovation	We are a first-of-a-kind research and development center with a mission to create leading-edge, paradigm-changing resources to meet the challenges of education in the 21st century. Their work capitalizes on the net-generation's deep engagement with the digital world outside of the classroom to improve learning in school. Teachers can deliver instruction of unprecedented individualization, fitted to each student's abilities.
Technology	K-12	cK-12	CK-12 provides free access to open-source content and technology for high-quality, customizable educational content in multiple modalities suited to multiple student learning styles and levels which will allow teachers, students and others to innovate and experiment with new models of learning. CK-12 helps students and teachers alike by enabling rapid customization and experimentation of teaching and learning styles.

Professional Development

Subject	Grade	Name	Description
Agriculture	6-12	Curriculum for Agricultural, Food and Natural Resources (CASE)	CASE is committed to the goal of improving educational experiences for agriculture students by empowering agriculture teachers. CASE develops curriculum utilizing science inquiry for lesson foundation and concepts are taught using activity-, project-, and problem-base instructional strategies. In addition to the curriculum aspect of CASE, the project ensures quality teaching by providing extensive professional development for teachers that leads to certification.
Astronomy	6-12	NASA LEARN Opportunity	The NASA LEARN Project is an innovative program that provides educators with on-site research and training with NASA Scientists in the summer and guided research projects that continue on throughout the school year. These educators conduct their own research with help of a team of NASA Scientists and share and integrate these projects into the classroom.
Atmospheric Science	6-12	Project ATMOSPHERE	AMS/NOAA Workshop is a two-week teacher enhancement workshop offered by the American Meteorological Society's Education Program. This project is specifically designed for precollege teachers who teach science courses with atmospheric content.
Education	K-12	Edutopia	Edutopia is dedicated to transforming the learning process by helping educators implement the strategies below. These strategies are empowering students to think critically, access and analyze information, creatively problem solve, work collaboratively, and communicate with clarity and impact.
Environmental Science	6-12	Teach Earth Fellowship	Earthwatch Expedition Fellowships is one to two weeks project that develops skills and understanding of environmental concerns. Research tasks vary with each project. Those fellowships are awarded through a competitive application process, including review by the Earthwatch Review Panel, composed of past fellows from around the country. Fellows are assigned to projects according to their interests, skills, and availability, project needs, and grant restrictions.

Environmental Science	9-12	Environmental Education (EE) Grants	The purpose of the Environmental Education Model Grants Program is to provide money to support environmental education projects that increase the public's awareness about environmental issues and provide them with the skills to take responsible actions to protect the environment. Under this program EPA seeks grant proposals from eligible applicants to support environmental education projects that promote environmental stewardship and help develop knowledgeable and responsible students, teachers, and citizens.
Geophysics	K-12	All About Mining	A Total Concept of the Mining Industry is an in-depth course designed for K–12 teachers and other educators. The course provides a detailed overview of America's modern mining industry.
STEM	K-12	The Top Online College Courses and Classes	Over 500 Free Online Classes From the World's Leading Universities.
STEM	K-12	Academic Earth	Academic Earth was launched on the premise that everyone deserves access to a world-class education and offers a collection of free online college courses from the world's top universities.
STEM	K-12	Albert Einstein Distinguished Educator Fellowship Program	The Albert Einstein Distinguished Educator Fellowship Program provides a unique professional development opportunity for accomplished K-12 educators in the fields of science, technology, engineering, and mathematics (STEM) to serve in the national education arena. Fellows spend eleven months working in a Federal agency or in a U.S. Congressional office, bringing their extensive knowledge and experience in the classroom to education program and/or education policy efforts. During the Fellowship, each Einstein Fellow receives a monthly stipend of \$6,000.00 plus a \$1,000.00 monthly cost of living allowance. In addition, Fellows receive a relocation allowance as well as a professional travel allowance.
STEM	K-12	ORNL	ORNL brings together scientists across a broad range of disciplines to tackle some of the most challenging problems in energy, global security, basic science and applied research. In these short videos, hear first-hand how ORNL's people are finding solutions.
STEM	K-12	Click 2 Science PD	Click2Science is an interactive, professional development site for trainers, coaches, site directors and frontline staff/volunteers working in out-of-school time programs serving children and youth.

STEM	K-5	Mickelson ExxonMobil Teachers Academy	The Mickelson ExxonMobil Teachers Academy is an intense five-day professional development program for third- through fifth-grade teachers. The overall goal of the program is to help teachers teach science and mathematics effectively and appropriately, based on the cognitive development of students in grades 3 through 5. All of the lessons of the Academy are linked to the Next Generation Science Standards as well as the Mathematics and Language Arts Common Core Standards.
STEM	6-12	Challenger STEM Learning Center	The UTC Challenger STEM Learning Center is a member of the National Challenger Center Network that has 45 centers located in the United States, Great Britain, South Korea and Canada. The Challenger Centers were built as a living memorial for the crew of the Challenger Space Shuttle mission that ended in tragedy in January of 1986. Programs include simulated space missions that reinforce and introduce students to real-world applications of STEM principles, summer camps, teacher professional development workshops, and team building sessions for businesses and other organizations.
Technology	K-12	eLearning Industry	321 Free Technology Tools for Teachers.
Technology	PreK-12	LEGO Education Academy	The LEGO Education Academy offers professional development programs for teachers who want to get the most out of LEGO Education resources. After selecting a workshop, a certified facilitator will come to your location and help up to 20 teachers get the most out of their LEGO Education resources. (Fee-based PD)
Technology	6-12	ITEEA International Technology and Engineering Educators Association	FTEE awards support programs that will make children technologically literate; transfer industrial and corporate research into schools; produce models of excellence in technology and engineering teaching; create public awareness regarding the nature of technology and engineering education; and help technology and engineering teachers maintain a competitive edge in technology.

Programs/Activities

Subject	Grade	Name	Description
Agriculture	6-12	The National FFA Organization	The National FFA Organization is an American youth organization, specifically a career and technical student organization, based on middle and high school classes that promote and support agricultural education. Programs provide them with the opportunity to travel, discover careers in agriculture, and develop their leadership skills.
Astronomy	K-12	NASA Education	NASA has many opportunities for students and educators. Students, educators and faculty may explore and experience unique space and aeronautics content through NASA's education opportunities.
Astronomy	9-12	National Space Club Scholars Program	Students work with professionals either at the NASA Goddard Space Flight Center or at the NASA Wallops Flight Facility for six weeks. Students will gain experience in research and in the operations needed to support NASA's missions. Areas of interest include Earth and space systems science, computer science, and engineering. The research focuses on computer applications and will give students an understanding of NASA's operations.
Astronomy	9-12	Laser Interferometer Gravitational-Wave Observatory (LIGO)	LIGO is a joint project operated by the California Institute of Technology and the Massachusetts Institute of Technology and funded by the National Science Foundation. Its purpose is to detect cosmic gravitational waves and to develop gravitational-wave observations as an astronomical tool. For visiting info call: 617-253-6411.
Astronomy	9-12	Zooniverse: Study Explosions on the Sun	Explore interactive diagrams to learn more about the Sun and the spacecraft used to study it. Zooniverse features images from STEREO, one of NASA's latest missions trained on the Sun and designed to investigate the Sun's dynamics, the space weather it generates, and how these conditions influence us here on Earth.
Astronomy	9-12	NASA DEVELOP	The NASA DEVELOP National Program encourages students and young professionals to lead research projects that focus on utilizing NASA Earth observations to address community concerns and public policy issues. Participants are given the opportunity to improve their communication, presentation, research, collaboration, technical, and networking skills.

Atmospheric Science	K-12	NOAA Earth System Research Laboratory	NOAA offers public tours of the Boulder facility. Tours last approximately 1.5 hours and include stops at several research divisions and the National Weather Service Forecast Office. School tours, including K-12 and universities, and special group tours are also available.
Atmospheric Science	PreK-12	S'COOL: Student's Cloud Observations On-Line	The S'COOL Project involves students (ages 5–20+) in real science, making and reporting ground truth observations of clouds to assist in the validation of NASA's CERES satellite instruments. Participants 1) obtain satellite overpass schedules, 2) observe and report clouds within +/-15 minutes of the satellite's passage, and 3) compare and classify the agreement between the ground and satellite views.
Atmospheric Science	6-12	Channeling Atmospheric Research into Educational Experiences Reaching Students (CAREERS) Camp	The CAREERS Summer Weather Camp provides broad exposure and training for middle school and high school students in weather forecasting, environmental modeling, and measurements.
Biology	9-12	Boston Leadership Institute Biological Research	The flagship program of the Boston Leadership Institute, this program is a three-week course in the field of biological research. Activities include hands-on laboratory work, private tours and fields trips to various sites around Boston, and in-depth research papers and presentations. The course is taught by Whitney Hagins, an award-winning biology teacher at one of the top public high schools in the country. Students can choose to commute or stay in one of the residence halls at Bentley University in Waltham, Massachusetts.
Chemistry	K-12	ACS International Activities	In association with the ACS Committee on International Activities, the Office of International Activities (OIA) is the indispensable educational resource that advises and helps the American Chemical Society, the chemistry community, and individual chemists to advance globally.
Education	K-12	Ready	Embedded with real-world connections, these multidisciplinary lessons teach what to do before, during, and after an emergency while fostering critical 21st-century skills such as problem solving, teamwork, creativity, leadership, and communication. This supplemental curriculum for grades 1-12 engages students with three lessons of inquiry-driven, project-based, and differentiated learning activities aligned to core subject standards.

Energy	K-12	TN Energy Education Initiative	Free Energy Camps provide K-12 teachers with the information and resources needed to teach the science of energy and energy conservation in the classroom, while helping students to become leaders in their schools and communities. Energy Camp offers activities presented by award-winning energy educators and professionals. Camp activities will address Tennessee science curriculum standards and will incorporate Common Core Standards for reading/language arts and mathematics. In addition, special breakout sessions will be conducted with grade-level clusters to ensure that all participating teachers leave the camps with ideas ready for their classrooms. Each camp will also include a one-day trip to energy-related sites, such as TVA's Cumberland Fossil and Watts Bar Nuclear Power plants.
Energy	6-12	Build It Solar	Plans, tools, and information to help you build renewable energy and conservation projects.
Energy	9-12	DTE Energy Summer Student Program	This popular program provides full-time, temporary employment opportunities for students who are either currently college undergraduates or high school seniors preparing to attend college in the Fall.
Engineering	K-12	AIAA Educator Academy	The AIAA Educator Academy is designed as a standards-based hands-on-program to involve students in creating solutions to real world problems. From landing a rover on Mars to perform scientific discoveries, to the proper weight and balance of a cargo airplane in flight, to exploring the bounds of the atmosphere with a space weather balloon, these modules are meant to excite students and encourage them to seek additional answers to the questions posed by the curriculum.
Engineering	K-12	The Center for Innovation in Engineering and Science Education (CIESE)	CIESE sponsors and designs interdisciplinary collaborative, engineering, and real-time data projects that students and teachers can use to dive deeper into science and connect learning with real-world events.
Engineering	K-12	Design Squad Nation	The DESIGN SQUAD NATION Web site brings creative ideas to life—dream it, build it, live it. Through the website's projects gallery, you can brainstorm new ideas, submit your own project, and respond to those of others, all the while earning points for your contributions. The games FIDGIT and STRING THING combine both creativity and puzzle-solving online. A huge library of videos show teams working together to tackle an array of engineering projects.

Engineering	6-8	Annual Helicopter 2050 Challenge	The Sikorsky Helicopter 2050 Challenge is an Innovative educational summer program fueled by engaging, hands-on-activities.
Engineering	6-12	Architect Studio 3D	Youth Architecture Workshop held every summer in the drafting room of Wright's first studio in Oak Park, Illinois. Young people in grades 7 through 12 learn architectural and design principles as they create their own buildings and get acquainted with the ideas of one of the world's most influential architects. With Architect Studio 3D, the Preservation Trust brings to young architects everywhere the exciting process of designing a home — hands-on. Starting as real architects do, with a client who has lifestyle preferences and a site that has its own environmental considerations, you will use your imagination to design your own architectural solutions.
Engineering	9-12	Engineering Innovation	Through Engineering Innovation, high school students apply their knowledge of math and science to labs and other hands-on projects. It's a great opportunity to link classroom concepts to real-world practice and to begin to think and work like an engineer.
Environmental Science	K-12	Earth System Science Education Alliance (ESSEA)	The Earth System Science Education Alliance (ESSEA) is a NASA, NSF and NOAA-supported program implemented by the Institute for Global Environmental Strategies (IGES) to improve the quality of geoscience instruction for pre-service and in-service K-12 teachers. ESSEA is based on a series of online courses for teachers that are offered by participating institutions. These institutions and faculty receive training, technical support, the ability to create and share their own course modules, and join an active community of Earth system science educators. A typical ESSEA course is 12–16 weeks and includes 3–4 modules on Earth system science topics, which are selected by the course instructor.
Environmental Science	K-12	GLOBE	The Global Learning and Observations to Benefit the Environment (GLOBE) program is a worldwide hands-on, primary and secondary school-based science and education program. GLOBE's vision promotes and supports students, teachers and scientists to collaborate on inquiry-based investigations of the environment and the Earth system working in close partnership with NASA, NOAA and NSF Earth System Science Projects (ESSP's) in study and research about the dynamics of Earth's environment.

Environmental Science	9-12	Earthwatch Teen Expeditions	Earthwatch Teen Expeditions are designed specifically and exclusively for 15- to 18-year-olds and are different from any other experience teenagers can have. Eighteen-year-olds have the option of joining a Teen Expedition or a regular expedition as an adult. 7-14 day expeditions: ~\$2,000-\$4,000
Food Science	6-12	Pathogen Tracker	This is web-based game based on Cornell University's Pathogen Tracker. Students become Foodborne illness investigators and do track investigation of a foodborne illness outbreak.
Forestry	K-6	Discover the Forest	Learn about where forests and parks are located near you. Also find out about cool games and activities you can do in nature.
General Science	K-12	SciStarter	The SciStarter website helps in searching taking part in, and contributing to science through recreational activities and research projects. SciStarter's already large database of science projects is continually growing. Projects range from collecting trash that washes up on the beach to helping scientists understand the effects of light pollution with a smartphone.
General Science	K-12	Education.com	Science activities help learners to understand important concepts through science activities.
Marine Biology	6-12	Broadreach	Programs that offer experiential summer adventures for teenagers' ages middle school through college, including scuba, sailing, marine biology, academic and wilderness programs that span the globe. 14-27 day trips: ~\$4,000-\$6,000
Marine Biology	6-12	ActionQuest	Expedition-based summer programs for teenagers including sailing, scuba diving, cultural immersion, marine biology and global exploration - all in a 'live-aboard' environment on voyages to the British Virgin Islands, the Caribbean's Leeward Islands, the Mediterranean, Galapagos, Australia, Tahiti and French Polynesia. 14-39 days: ~\$5,000-\$7,000.
Marine Biology	9-12	SeaMaster	Global study abroad semester programs at sea for college students and high school graduates. 20-80 day trips: ~\$4,000-\$24,000.
Math	K-12	Ascended Math	Web based program that identifies students' learning gaps and then guides students through differentiated instruction, interactive activities, and practice.
Math	K-12	GeoGebra	Free, multiplatform program for teaching and learning math at all levels of education. It covers geometry, algebra, tables, graphing, statistics, and calculus in one easy-to use software package that has received several awards in the United States and Europe.

Mining and Technology	9-12	Summer Science Program	The Summer Science Program (SSP) is a residential academic enrichment program for gifted rising high school seniors offered at both the New Mexico Institute of Mining and Technology in Socorro, New Mexico and Westmont College in Santa Barbara, California. The SSP curriculum is centered around a group research project to determine the orbit of an asteroid, and participants study college-level astronomy, physics, calculus and programming. Students also attend guest lectures and go on field trips. The program runs for approximately five weeks.
Ornithology	PreK-12	Urban Birds	Urban Birds is a year-round project developed and launched by The Cornell Lab of Ornithology. Its primary purpose is to reach diverse urban audiences who do not already participate in science or scientific investigation. The project provides variety of startup kits to start your community event.
STEM	K-12	National Museum of the US Air. Force	National Museum of the U.S. Air Force offers lesson plans, resource guides, interactive programs, and presentations on aerospace topics.
STEM	K-12	Discovery Education STEM Camp	STEM Camp is a series of standards-aligned curricula available to schools, districts, nonprofit organizations, and parents for use in summer camps, after-school learning opportunities, and other educational programs. The content centers on water, urban infrastructure, and energy and includes hands-on and virtual labs, engineering challenges, digital investigations, interactive videos, and career connections designed to inspire primarily middle and high school students in learning about STEM subjects.
STEM	K-12	Penn State University: Science U Camps	Penn State University offers a wide range of science camp opportunities for students of all ages and interests.
STEM	6-12	Challenger STEM Learning Center	The UTC Challenger STEM Learning Center is a member of the National Challenger Center Network that has 45 centers located in the United States, Great Britain, South Korea and Canada. The Challenger Centers were built as a living memorial for the crew of the Challenger Space Shuttle mission that ended in tragedy in January of 1986. Programs include simulated space missions that reinforce and introduce students to real-world applications of STEM principles, summer camps, teacher professional development workshops, and team building sessions for businesses and other organizations.

STEM	6-12	STEM Collaborative	Targeting middle school students, these interactive online learning activities use digital media, virtual environments, simulations, and videos to apply math to real-life applications. Designed to actively engage students, the activities integrate math, science, critical thinking, and reasoning skills in a fun way.
STEM	9-12	Center for Excellence in Education	Each summer, 80 of the world's most accomplished high school students gather at the Massachusetts Institute of Technology (MIT) for the Research Science Institute (RSI). RSI is the first cost-free to students, summer science & engineering program to combine on-campus course work in scientific theory with off-campus work in science and technology research.
STEM	9-12	Exploring Careers in Engineering and Physical Science	For students entering grades 9–12, these weeklong summer workshops at the University of Minnesota offer an introduction to engineering, science, and math opportunities. Students participate in demonstrations, lectures, tours, and lab experiences.
STEM	9-12	National Youth Science Camp	The National Youth Science Camp (NYSC) is a residential science education program for students around the country. It provides a wide variety of outdoor adventures and hands-on experiences to give students a true appreciation for the outdoors. The goal of this program is to foster youth interest in science through informal science education programs, with an emphasis on positive interactions between students and the environment.
STEM	9-12	JPL Summer High School Internship Program	The Jet Propulsion Laboratory Summer High School Internship Program (JPL SpaceSHIP) is an eight-week internship designed for high school students, 16 or older, who have demonstrated a strong interest in, and aptitude for, science, technology, engineering, or mathematics (STEM). One of JPL SpaceSHIP's objectives is to encourage precollege students who have been traditionally underrepresented in STEM fields to consider these careers. Students participating in JPL SpaceSHIP can conduct introductory research, work in a technical environment, and expand their computer skills under the guidance of NASA's science, engineering, and technical professionals.

Technology	K-12	The Tech Museum for Innovation	The Tech Museum of Innovation is a hands-on technology and science museum for people of all ages and backgrounds. The museum-located in the Capital of Silicon Valley - is a non-profit learning resource established to inspire the innovator in everyone. Through programs such as The Tech Challenge, our annual team design competition for youth, and internationally renowned programs such as The Tech Awards, The Tech celebrates the present and encourages the development of innovative technology for a more promising future.
Technology	K-12	Science-Technology Centers	Science centers give science a presence in the community and offer people of all ages and backgrounds the opportunity to ask questions, discuss, and explore.
Technology	K-8	Cyberchase	The Emmy-Award winning animated series on PBS KIDS GO!, tells the story of three kids who use math and problem solving to thwart the dastardly Hacker. “Cyberchase’s” extensive multimedia website features hundreds of videos, games and activities to support STEM learning.

Publications

Subject	Grade	Name	Description
Chemistry	9-12	ACS Publications	Research management, collaboration and publishing in a single interface.
Chemistry	9-12	Chemistry Matters Online	ChemMatters is an educational magazine containing fascinating articles on hot topics for teenagers. By demystifying the chemistry behind a subject—be it barbecue, perfume, or nutrition labels—our articles explain the connection between the chemistry teenagers learn in school and the world around them.
Chemistry	9-12	ChemMatters	ChemMatters magazine helps high school students find connections between chemistry and the world around them. ChemMatters is used by thousands of teachers across the United States as a complement to textbook. ChemMatters may be purchased as a set by academic year for \$15 per academic year.
Common Standards	K-8	Sundance	Sundance Publishing has been proud to partner with educators to inspire, motivate, and educate students in classrooms around the country. Sundance Publishing is a leader in the publishing of PreK–8 reading instructional materials and books for below-level readers in middle and high school.
Ecology	9-12	Society For Ecological Restoration (SER)	SER is dedicated to reversing degradation and restoring the earth’s ecological balance for the benefit of humans and nature.
Education	K-12	BioOne	BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.
Education	K-5	Highlights	Inspire a love of learning with activities that encourage children to invent, discover and explore.
Education	K-12	Linus Publications	Linus Publications combines cutting-edge technology with traditional publishing values, to produce books that are among the best in the industry. In addition to trade books—both fiction and nonfiction. They are dedicated to bring out high-quality educational materials, including textbooks, case books, lab manuals, and anthologies.
Education	K-12	Scholastics	A publication with resources, tools, strategies, ideas, student activities, books, products and services for teachers.

Education	K-12	Springer	Springer provides scientific and professional communities with superior specialist information – produced by authors and colleagues across cultures in a nurtured collegial atmosphere. Choose from over 430 peer-reviewed, fully open access scientific and business journals.
Environmental Science	6-8	Natural Inquirer – A middle school science education journal	The Natural Inquirer is a middle school science education journal. The Natural Inquirer, was created so that scientists can share their research with middle school students. Scientists report their research in journals, which enable scientists to share information with one another. Each article talks about scientific research conducted by scientists in the USDA Forest Service.
General Science	K-12	Journys	The Journal of Youths in Science (JOURNYS) is a completely student-run science publication featuring original research, reviews, and op-eds from youths under age 20. Unlike most science magazines, JOURNYS provides the unique opportunity for students, themselves, to get published. Filling the gap between professional science journals and magazines written for younger children, JOURNYS allows student authors to expand their existing knowledge and readers to gain appealing and useful insights from their peers.
Geography	K-12	Explorer	National Geographic magazine for K-12 students.
Geology	K-12	USGS Publications Warehouse	Pubs Warehouse provides access to over 100000 publications written by USGS scientists over the century-plus history of the bureau.
Math	K-5	DynaMath	DynaMath magazine makes math meaningful and accessible to students by applying core math concepts to high-interest, real-world topics.
Physics	6-12	Physics Journals Online	The American Physical Society (APS) offers public access to the journals we publish through U.S. public and high school libraries. APS offers this service to increase public engagement in science and deepen scientific understanding. Librarians and high school teachers can obtain access by accepting an online site license and providing valid IP addresses for their public-use computers.
STEM	K-12	AAAS Science Journals	AAAS publishes three respected peer-reviewed journals. Science, the premier global science weekly; Science Singling, the leading journal of cell singling and regulatory biology; and Science Translational Medicine. Integrating medicine, engineering and science to promote human health.

STEM	K-12	Delta Education	Supporting pre-K to 8th-grade educators, Delta Education science curriculum products embody the best in inquiry-based science education. Delta provides the research-based FOSS® curriculum and other programs such as Delta Science Modules, as well as hands-on classroom resources.
STEM	K-12	Free Books and Resources	NSTA's Free resources including journal articles, books chapters, etc.
STEM	K-8	LHS GEMS	GEMS develops and publishes science and math curriculum, offers professional development, and maintains an international support network.
STEM	K-12	Science Daily	Your source for the latest research news in variety of STEM's topics.
STEM	K-12	Scientific American: Citizen Science	Scientific American contains an extensive list of citizen science projects and activities in which anyone can participate. Categories include: energy and sustainability, evolution, health, mind and brain, space, technology, and more.
STEM	K-12	SciTech Connect	Semantic Search is used to find free, publicly-available DOE-Sponsored R&D results, including technical reports, bibliographic citations, journal articles, conference papers, books, multimedia and data information. SciTech Connection is a consolidation of two core DOE search engines, the Information Bridge and the Energy Citations Database.
STEM	6-8	Science World	The online teacher's companion to Science World, provides middle school and high school students with science news and rich informational texts that connect STEM to the Common Core.
Technology	K-12	Technical Education Magazine	Technical Education Publishing is a STEM education source.
Zoology	K-12	Science Direct	The foremost publisher of scientific, technical and medical information, producing one-quarter of all the scientific and technical content in the world.

Scholarships, Internships, Fellowships

Subject	Grade	Name	Description
Astronomy	K-12	NASA Education Program Opportunities	List of opportunities such as internships and cooperative education programs, scholarships and fellowships, summer research, team competitions, after school activities and more.
Atmospheric Science	9-12	NOAA	NOAA hosts a number of opportunities for students and teachers to experience our research first-hand like scholarships, fellowships and internships.
Chemistry	9-12	American Chemical Society Scholars Program	ACS awards renewable scholarships to underrepresented minority students who want to enter the fields of chemistry or chemistry-related fields. Awards of up to \$5,000* are given to qualified students. African American, Hispanic, or American Indian high school seniors or college freshman, sophomores, or juniors pursuing a college degree in the chemical sciences or chemical technology are eligible to apply.
Chemistry	9-12	American Chemical Society Project SEED Program	The ACS Project SEED summer research program opens new doors for economically disadvantaged students to experience what it's like to be a chemist. Students entering their junior or senior year in high school are given a rare chance to work alongside scientist-mentors on research projects in industrial, academic, and federal laboratories, discovering new career paths as they approach critical turning points in their lives. For 8 to 10 weeks, SEED students have the unique opportunity to work with scientists, who help them develop laboratory, written and oral skills as they discover that they are capable of conducting scientific research. Mentors also provide guidance, encouragement, and letters of recommendation for college.
Energy	9-12	Student Internships in Energy Efficiency and Renewable Energy	The Office of Energy Efficiency and Renewable Energy offers exciting student volunteer internships throughout the year in its Washington, D.C., headquarters. These volunteer internships provide opportunities for students to learn through direct experience in the fields of energy efficiency and renewable energy. In addition, some colleges and universities give academic credit for federal government internships—and an internship with the government can sometimes be the starting point for a full-time paid position after graduation.

Engineering	K-12	Science and Engineering Apprentice Program	SEAP, sponsored by George Washington University and the Department of Defense, is an eight-week internship. It places students with experienced scientists and engineers in Army Research Laboratories. Students work on projects benefiting the Army and the community. This gives students firsthand experience with research as well as a potential career in the Army. At the end of the program, students present their research at a seminar.
Environmental Science	9-12	National Environmental Educations Foundation	NEEF offers a variety of grants and awards in order to support and highlight the great work being done across the nation at the local level. It supports individual, educator, and group commitment to nature through education and service.
STEM	9-12	NOAA Internship Program	The NOAA Internship Program is a six to eight week paid summer Career Orientation Program aimed at introducing NOAA related sciences to juniors and seniors in high school with a goal of increasing awareness and influencing education and career commitments. The long range aim of the program is to broaden the pool of technical talent available to NOAA occupations.
STEM	9-12	The Air Force Research Laboratory (AFRL)	The Air Force Research Laboratory (AFRL) Scholars Program offers stipend-paid summer internship opportunities to undergraduate and graduate level university students, as well as upper-level high school students. The selected interns gain valuable hands-on experiences working with full-time AFRL scientists and engineers on cutting-edge research and technology and are able to contribute to unique, research-based projects. Graduate interns are able to collaborate with AFRL on current research and incorporate the research into their graduate work.

STEAM: "A" for Arts

Subject	Grade	Name	Description
Astronomy	K-12	Arts and the Cosmic Connections	Art & the Cosmic Connection is an interdisciplinary program developed by scientists, artists & educators to encourage learners to explore the mysterious worlds in our solar system and their geologic stories. Scalable for any grade level from K–college, this resource combines art, science, and storytelling. Materials include an educator’s guide, a PowerPoint presentation, Presentation Notes, and Space and Earth Images. In addition, an Interactive Poster highlights student artwork and the NASA images that inspired it, as well as art concepts such as shape, line, color, value, and texture.
Atmospheric Science	K-12	Schmittie The Weather Dog	Schmittie The Weather Dog is a philanthropic pup and celebrity in her own right.
Design and Technology	K-12	Tinkercad	Tinkercad can quickly turn an idea into a CAD model for a 3D printer.
Design and Technology	K-12	ExploraVision Project	ExploraVision project, students designed technologies for 20 years into the future. As an extension to the project, students created 2-D and 3-D models of their technologies that communicate their ideas and design process.
Food Science	K-12	Food Safety Music	Food Safety Music Website that features Dr. Carl Winter's hilarious and educational food safety music parodies. With a few clicks you can be on your way learning (and hearing) about food safety through song and video. It's all here for you - 27 downloadable songs, PowerPoint slide presentations with accompanying lyrics and clip-art, lyric files, Flash animations, live concert footage, scheduled performances, and media accounts. Songs address a wide variety of food safety topics and have been developed for diverse audiences including children, health professionals, food service workers, food regulators, and teachers. Styles range from pop, country, rock, rap, Latin, and disco and there's even one song in Spanish.
Math and Science	K-12	Arts Across the Curriculum	Integrate Music and Visual Arts with Social Studies, Math & Science. Free instructional materials for teachers.

STEM	PreK-12	Sing about Science and Math	The website and database provides access to more than 6,000 songs and 200 lesson plans and quizzes for incorporating music into preK–college science, technology, engineering, and math (STEM) classes. In many cases, the lyrics and a video accompany the song. In addition, teachers can find relevant research supporting the use of science and math songs in education or join online discussion groups exploring the use of science songs in the classroom. These STEM songs also can be used to stimulate critical thinking and combat stereotypes about scientists.
Technology	K-12	Glogster EDU	Glogster is a great creativity site who’s tag line is “poster yourself”. A ‘glog’ is basically an online poster web page. Students can combine text, pictures, graphics, video, and audio to create an interactive online poster. Glogster has a very simple to use interface. The final glog can be hosted by Glogster or you can embed it into a wiki, blog, or class website.
Technology	K-12	Microscope Art	Students use digital microscope cameras to take photographs of everyday objects at 1x, 50x, 100x, and 200x. They create collages of their images and write artist’s statements that communicates their scientific understanding.
Technology	K-12	Zimmer Twins	Students direct and produce their very own animated movies. The easiest way to start using Zimmer Twins in the classroom is to use it as a story starter. Students can watch a “starter” video and finish the story however they would like. Zimmer Twins can be used without registration; however, students will not be able to save their creations. Creating an account requires an email address. If your students do not have access to a school email address, you can create a classroom account that every student.

Supplies

Subject	Grade	Name	Description
Astronomy	K-12	Celestron Telescopes	Celestron Telescopes manufactures telescope parts, optics, astrophotography, binoculars, spotting scopes and digital microscopes for serious and amateur astronomers.
Biotechnology	K-12	STR	STR is the premier provider of quality hand-held video camera microscopes including the Scope On A Rope, ProScope, DLite and others. Our specialized Education Kits are not available anywhere else and include the widest range of magnification lenses, accessories and curriculum designed for education.
Biotechnology	K-12	Ken-A-Vision	Ken-A-Vision Manufacturing, Inc. has created innovative and award-winning educational products for students and teachers around the world. They are the makers of the FlexCam, Vision Viewer, and the Video Flex document cameras and visualizers. Our popular microscopes include the kena digital microscope and the extensive Comprehensive Scope 2 line.
Ecology	K-12	Emantras	Emantras' solutions and products are designed to engage students with innovative content models, and empower the learning ecosystem by delivering technologies that unfetter educational opportunity.
Education	K-12	ArTec Blocks	ARTEC is a leading company of school teaching materials.
Education	K-12	EAI Education	EAI education offers teaching supplies, classroom resources, manipulatives, and educational games at the best prices! EAI Education provides over 6,000 teaching supplies for grades preK-12, home schools, parents, students, and colleges. We provide safe and easy ordering and offer 100% satisfaction guarantee on all our products.
Education	K-12	Newbridge	A complete source for curriculum-Based nonfiction PreK–8 literacy needs while teaching Science, Social Studies, and Math content.
Energy	K-12	BioDrill	BioDrill provides quality learning tools for 6th-12th grade classrooms, students, and teachers.
Engineering	6-12	Hummingbird Robotics Kit	Hummingbird Robotics Kit is a spin-off product of Carnegie Mellon's CREATE lab. Hummingbird Kit is designed to enable engineering and robotics activities for ages 13 and up (10 with adult supervision) that involve the making of robots, kinetic sculptures, and animatronics built out of a combination of kit parts and crafting materials.

Environmental Science	6-12	Backpack Lab	HANNA instruments' Backpack Lab product line strives to enrich students' science experiences in the classroom, by providing quality experiments for students to execute, that are based on the 21st Century Skills as well as the Science and Engineering Practices.
Environmental Science	K-12	Wildlife Supply Company	Founded in 1938 by wildlife biologist, Wildlife Supply provides a wide e range of wildlife products that are specified in many EPA protocols.
General Science	K-12	Science First	Science First® is the owner of Accent Science and Learning Technologies, Inc.®, including the Project Star® and Hands on Optics® product lines.
General Science	K-12	Fisher Science Education	Find incredible values on teaching tools from earth science to physics and more.
General Science	K-12	Flinn Scientific, Inc.	Safer source for science supplies.
General Science	K-12	CPO Science	CPO Science provides educators with quality hands-on science programs. Each system includes student text, investigations manual, equipment, teacher's guide, and resource material, and technology tools for planning and enhanced student learning.
General Science	K-12	Science Companion	Science Companion was designed by teachers, for teachers to answer questions about pedagogy, classroom and supplies management, best practices learned by other teachers.
General Science	K-12	Educational Innovations Inc.	Educational Innovations is the master teacher and educator source for inexpensive & hard to find science workshop supplies & materials for the lab, classroom, or workshop of the school, university and home experimenter.
General Science	K-12	ScienceWiz	The award winning ScienceWiz line got its start in 1995 with a release of the first title ScienceWiz Electricity. Their line of science kits stemmed from Dr. Penny Norman's volunteer work teaching science in her children's elementary schools and her ScienceWiz after school and summer programs. With initial development supported by grants from the National Science Foundation and the Franklin Foundation, each of their kits is created with the goal of teaching fundamental scientific concepts to children through hands-on play.
General Science	K-12	Elenco	Elenco offers innovative and educationally based toys focused on broadening scientific knowledge, discovery of the world at large, and promoting creative thinking.

Geology	K-12	The USGS Store	The USGS Store is a portal to FREE downloads and information as well as a convenient way to purchase USGS paper maps and other paper products.
Health Science	K-12	VWR International	VWR enables the advancement of the world's most critical research through the distribution of a highly diversified product line to most of the world's top companies in the pharmaceutical, biotech, industrial, educational, governmental and healthcare industries.
Marine Biology	K-12	SharkFinder	SharkFinder™, true to its name, is a STEM education program aimed at finding fossil elasmobranch (shark, skates and ray) remains in the Atlantic coastal plain of Virginia, Maryland, North Carolina and South Carolina. SharkFinder™ will allow classrooms and citizen scientist the opportunity to search through highly concentrated fossil-bearing media to find and report shark fossils. SharkFinder kits contain fossil-bearing matrix from the Atlantic Coastal plain. This matrix is ancient ocean sediments and contains the fossilized remains of sea life that was buried by these sediments.
Microbiology	K-12	Carolina	Carolina has been providing the highest-quality living organisms and cultures available; extensive lines of lab supplies and equipment in the industry.
STEM	K-12	Pasco	PASCO is the global expert in 21st century science education. For almost 50 years, they have been designing, developing and supporting innovative education technology solutions for primary, secondary, and university level science. PASCO and its network of science education partners have assisted educators on both school-level and ministry-level projects in more than 100 countries around the world. PASCO materials are correlated to national and state standards. They offer workshop, Co-Teaching, Live online training, training video, and free online experiments base on a subject and a grade level.
STEM	K-12	Carolina Curriculum for Science and Math	With support from an NSF grant, the Smithsonian Science Education Center (SSEC), a division of the Smithsonian Institution, developed The STC™ Program, a basal, science and engineering practices centered program for grades K–10. The STC™ Program is a basal, inquiry-based science curriculum that covers life, earth, and physical sciences with technology. STC™ was developed by the Smithsonian Science Education Center based on research into how students learn best.

STEM	K-12	STEMfinity	STEMfinity offers thousands of hands-on academic enrichment kits with curriculum to teach PreK-12 students Science, Technology, Engineering, Math (STEM), Robotics, Electronics, Alternative Energy, RC, Rockets & Beyond. STEMfinity’s educational kits are a perfect resource for underrepresented & at-risk students to develop an understanding of STEM subjects through hands-on projects...inspiring the students to pursue STEM careers. Their kits are suitable for afterschool programs, classrooms, homeschools, and individuals looking to build a STEM foundation for their future.
Technology	K-12	Boardworks	Boardworks publishes educational software designed for whole-class teaching on interactive whiteboards and projectors, with a growing range of products covering science, math, English, history and languages for elementary, middle and high school teaching, including AP courses.

*Note: The book’s content derived directly from the linked Web sites as a primary source of information.