A special edition newsletter for classroom teachers.

How are you doing?

Things definitely look different right now as we are all adjusting to the new "stay at home, work from home" reality. Our lives are changing daily and we are having to try new things as we attempt to bring a sense of normalcy to our daily routines. We hope that you are finding ways to accommodate these changes both professionally and personally.

Despite dramatic changes, one thing remains the same - we're thinking of you during this difficult time and we are here for you. In the face of great uncertainty you may count on our ʻohana to do all we can to bolster community and support. We'll get through this together.

How can we help?

Perhaps you are looking for new ideas to deliver content? There are many ways you can take advantage of our resources as well as online opportunities we have found from other educational organizations. Here is a snapshot of some of our ideas (see full list of resources that follows this message or in the attached document):

- **Leverage free online multimedia content** (e.g., [Big History Project](#), [Khan Academy](#), [PBS Digital Studios](#), [Scratch](#), [Ted-Ed Video Lessons](#), [Tinkercad](#)) or interactive simulations (e.g., [Explore Learning Gizmos](#), [PhET](#), [Google Earth](#)) to provide new learning opportunities for your students. We have compiled a list of free interactive curriculum resources, multimedia eBooks, and expert-approved videos that include connections to standards and formative assessments. View full list below.

- **Send your students on a virtual field trip** to anywhere in the world using interactive virtual tours of museums and national parks (view full list below). Encourage deeper learning by asking questions that connect virtual observations to content or key concepts. Consider asking students to reflect not just on what they saw or learned, but also what they would like to learn more about. Add fun by creating an "I Spy" challenge for students to complete. Create flashcards using [Quizlet](#) to reinforce concepts. Add accountability by creating a summative quiz using [Kahoot!](#) Or [GoogleForms](#).

- **Encourage students to hone their powers of observation** by assigning them to watch web camera live streams of aquariums, wildlife, or zoos (view full list below). Ask students to choose one animal and collect behavioral data using an ethnogram ([London Zoo template](#); [Woodland Zoo template](#)). Follow up with reflective questions that encourage students to analyze and interpret their data. Extend by asking students to plot their data in [Google Sheets](#) and share with their classmates online. Also consider using some of the fun activities found in [Smithsonian National Zoo's "Animal Webcam Activities" guide](#).

- **Challenge your students to participate in an online citizen science network** (e.g., [iNaturalist](#), [Cornell Lab of Ornithology](#), [BudBurst](#)), which will encourage them to observe and communicate the science they find around themselves. Each network has observation protocols and guidelines to help citizen scientists with data collection.

- **Video record a demo to share with your students online.** Even when students cannot engage with the kit themselves, you can pose questions that inspire sensemaking, check for understanding, and spark content connections. Check out our [Digital Media Fellows' list of resources](#) to help you create engaging videos like a pro.

We know that it's important to stay connected, engaged with your students and keep the learning going outside of your classroom and we want to help you in any way that we can. Drop us a line on the Leaves to ask us questions or share how you are utilizing digital tools to help your students. Want to share a new resource with everyone? Email resource ideas to Shaunna Smith (STEM Specialist and Liaison) at shaunna.smith@hawaii.edu.

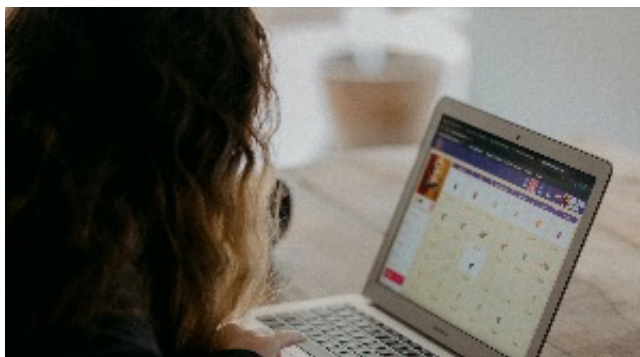Together we can keep STEM learning hale and hearty!

Coming soon!

Be on the lookout for our next newsletter, which will curate *Resources for Engineering Design Activities Using Everyday Materials and Academic Rigor.*

Mahalo,

Shaunna Smith (STEM Specialist and Liaison) and the STEM Pre-Academy Team

https://stempreacademy.hawaii.edu

NOTE: Links as of April 8, 2020

Free Online Multimedia Content

Leverage free online multimedia content or interactive simulations to provide new learning opportunities for your students. We have compiled a list of free interactive curriculum resources, multimedia eBooks, and expert-approved videos that include connections to standards and formative assessments.

- **Scaffolded Curricula: use individual resources or assign scaffolded units**
  - [Big History Project](#)
    - **Description**: Interactive content weaves insights from many disciplines to form a single story that helps us better understand people, civilizations, and how we are connected to everything around us.
    - [Overview Video](#) (YouTube)
    - **Compatibility**: Works on any Internet-enabled device (Note: [Also available as Partner Content on Khan Academy](#))
    - **Content Tag**: multidisciplinary, art, language arts, social studies, science
    - **Standards**: Common Core aligned
  - [Khan Academy](#)
    - **Description**: Khan Academy is on a mission to provide a free, world-class education for anyone, anywhere. Grade-level content is available for math, science, arts & humanities, ELA, Computing, College & Careers, and more.
    - [Overview Video](#) (Khan Academy website)
    - **Compatibility**: Works on any Internet-enabled device, app available
    - **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, language arts, math, social studies, science
    - **Standards**: Common Core aligned (see [Khan Academy Common Core Math map](#))
  - [Google CS First](#)
    - **Description**: Free easy-to-use computer science enrichment materials that engage a diverse student population in grades 4-8 (ages 9-14). Activities consist of one-hour. One-hour activities are short 45 - 75 minute standalone activities designed for students to start and complete a coding project in one session. Students will watch a series of videos and create one coding project in Scratch.
    - [Overview Video](#) (YouTube)
    - **Compatibility**: Works on any Internet-enabled device
    - **Content Tag**: multidisciplinary, computer science, CTE/STEM, math, science
    - **Standards**: aligned with Common Core, NGSS, ISTE, CSTA

- **Modular Content Resources: pick and choose individual topics**
  - [Ted-Ed Video Lessons](#) (text and video)
    - **Description**: Video-based lessons include expert-created content to "Watch", "Think" formative assessment, resources to "Dig Deeper", and questions that facilitate "Discussion". Videos cover a variety of disciplines (e.g., Math, Science, Arts, Engineering, Health) and are organized by [subject/age](#) or by [series that cover interesting themes](#) (e.g., Superhero Science, Inventions that Shaped History, Our Changing Climate, Periodic Elements).
    - [Overview Video](#) (YouTube)
    - **Compatibility**: Works on any Internet-enabled device with a browser
    - **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, language arts, math, social studies, science
    - **Standards**: Some specify alignment, but others need to be adapted.
  - [NSTA Interactive eBooks](#) (text, animation, and video)
    - **Description**: Interactive eBooks+ provide learning experiences that are both engaging and inspiring. Each e-book is designed with images, animations, simulations, and videos all of which can be taken into the classroom and used. Review questions, writing prompts, and Check Your Thinking buttons all help assess your understanding of the content. These e-books include learning outcomes across grade bands and pedagogical implications, including student preconceptions.
    - [Overview Video](#) (YouTube)
    - **Compatibility**: Works on any Internet-enabled device with a browser. [NSTA Reader app](#) is also available for enhanced viewing on iOS and Android devices.
    - **Content Tag**: science
    - **Standards**: NGSS
  - [Science Journal for Kids](#) (text and video)
    - **Description**: Hundreds of cutting-edge peer-reviewed science research adapted for students and their teachers. Each journal article has 1) free PDF student article (with glossary and "Check for Understanding" questions), 2) opening "video

hook", and 3) free PDF teacher's answer key. Journal articles are sorted by grade/reading level and scientific field. Website also includes lesson ideas and extensions. Science Journal for Kids also has a [YouTube channel](#) where they post Q/A interviews with researchers, and more.

- [Overview Video](#) (YouTube)
- **Compatibility**: Works on any Internet-enabled device with a browser. Download files as shareable PDF.
- **Content Tag**: science
- **Standards**: NGSS

- [Pitsco SySTEM Alert! And Blog](#) (text)
    - **Description**: Find everyday STEM, fast facts, trends and related topics, and much more in SySTEM Alert! publication. Download and explore recent issues for free. Each issue includes a quiz and answer key. Also check out the Pitsco Blog, which serves up several pop culture topical blogs and the science/STEM behind some favorite foods and seasons. Hands-on ideas are included too!
    - **Compatibility**: Works on any Internet-enabled device with a browser
    - **Content Tag**: multidisciplinary, CTE/STEM, science
    - **Standards**: NGSS

- [PBS Digital Studios](#) (video)
    - **Description**: PBS Digital Studios is a network of 20+ series that bring you fresh and insightful content through the familiar lens of PBS. Content is also available on [PBS Digital Studios YouTube channel](#). Check out "Crash Course" and "It's Ok to Be Smart" to jumpstart STEM concepts or "America From Scratch" to explore big questions about American society and the future.
    - [Overview Video](#) (PBS)
    - **Compatibility**: Works on any Internet-enabled device with a browser
    - **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, language arts, math, social studies, science
    - **Standards**: not formally aligned but can be adapted

- **Interactive simulations**:
    - [Explore Learning Gizmos](#)

- **Description**: Over 400 online interactive math and science simulations that power inquiry and understanding for grades 3-12. Note: Free educator account provides limited access and full access is available for purchase.
- [Overview Video](#) (YouTube)
- **Compatibility**: Works on any Internet-enabled device
- **Standards**: Common Core, NGSS aligned (see [About Gizmos](#))
- [PhET](#) (**Ph**ysics **E**ducation **T**echnology)
    - **Description**: Created by University of Colorado - Boulder. The free interactive simulations for math and science that can be used to explore a variety of concepts. PhET sims are based on extensive education [research](#) and engage students through an intuitive, game-like environment where students learn through exploration and discovery.
    - [Overview Video](#) (PhET website)
    - **Compatibility**: Use Internet to download individual simulations to device or embed on your own website
    - **Content Tag**: multidisciplinary, CTE/STEM, math, science
    - **Standards**: Common Core, NGSS aligned (see [PhET NGSS connections](#))
- [Google Earth](#)
    - **Description**: Google Earth is a computer program that renders a 3D representation of Earth based primarily on satellite imagery. The program maps the Earth by superimposing satellite images, aerial photography, and GIS data onto a 3D globe, allowing users to see cities and landscapes from various angles. Fly through landmarks and cities like London, Tokyo and Rome in stunning 3D, then dive in to experience them first hand with Street View. Users can create their own tours or view tours created by others, Choose your own adventure with Voyager, Discover new places with Knowledge Cards, or Snap and share a Postcard. View their [Resources](#) to learn more about how to create, develop, and use in the classroom. Check out their [Education Collection](#) for pre-created, high-quality tours that are ready for use.
    - [Overview Video](#) (YouTube)
    - **Compatibility**: Works on any Internet-enabled device

- **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, language arts, math, social studies, science
- **Standards**: Common Core, NGSS aligned (see [Common Sense Education connections](#))
- **Examples of Available Educational Tours**:
    - [Buildings Inspired by Nature](#) (World)
    - [Discover Hawai'i Landmarks](#) (Hawai'i)
    - [Exploring Earth's Ecosystems](#) (World)
    - [How Wind Becomes Electricity](#) (World)
    - [Math and Architecture](#) (World)
    - [Modern Human Migration](#) (World)
    - [Myths and Legends from Around the World](#) (World)
    - [The Underground Railroad](#) (North America)
    - [Tsunamis in History](#) (World)
- **Facilitate free online creation tools to support STEM learning**:
    - [Scratch](#)
        - **Description**: Visual-based programming using drag-and-drop code. Interactive tutorials and challenges are available to help teach basic concepts of computer science. Scratch can be used to create digital stories, video games, and more. Check out more ideas on the [Scratch Ed website](#), where you can find best practices, challenges, and lessons.
        - [Overview Video](#) (YouTube)
        - **Compatibility**: Works on any Internet-enabled device
        - **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, language arts, math, social studies, science
        - **Standards**: aligned with Common Core, NGSS, ISTE, CSTA
        - **Distance Learning Integration Ideas**: Ask students to watch the overview video then complete one of the [online activity guides](#), which are quick, guided lessons that teach Scratch tools and basic computer programming skills. Students can easily share the link to their saved creation. Extend learning by assigning students a [Scratch Starter Project](#), which are guided lessons that explore more advanced computer programming skills. Add an extra challenge with open-ended prompts, such as giving students a content-specific design challenge (e.g., create an interactive video game with "x" characters that explains the process of "y"), or randomized story starter

prompt ([Scholastic story-starter](#)) to guide their open-ended creation of an animation. Teachers can compile a list of completed Scratch projects and host an online arcade/gallery for peers to play or view their classmates' creations. For added assessment and deeper learning, ask students to complete a [design journal](#) to track their progress, explain their computational thinking, iteration, and reflection.

- [Tinkercad 3D Modeling](#)
  - **Description**: Drag-and-drop computer-aided design (CAD) 3D modeling tool. Interactive tutorials and classroom modules are available. Extend this tool by interacting with [Smithsonian artifacts](#) or export creations to [Minecraft](#). Access more instructional materials on the [Tinkercad Teacher webpage](#) (where you can create a Tinkercad classroom and access lessons) or view our [3D printing resources webpage](#) for more ideas.
  - [Overview Video](#) (YouTube)
  - **Compatibility**: Works on any Internet-enabled device
  - **Content Tag**: multidisciplinary, art, CTE/STEM, language arts, math, social studies, science
  - **Standards**: Common Core, ISTE, and NGSS aligned
  - **Distance Learning Integration Ideas**: Ask students to watch the overview video then complete the online [3D Starters](#) so they can learn the basic Tinkercad tools and features. Then ask students to complete one or more of the online [3D Lessons](#) and discuss their experience online using a GoogleDoc journal entry or live chat with a web-conferencing tool. Add an extra challenge by assigning students the [Tinkercad & Instructables "Make It Green" design challenge,](#) which asks, "How might we use design to address climate change?" (see website for lesson plan and instructional materials). Alternatively, give students an open-ended design challenge that asks them to recreate an animal, literary character, geographic landmark, local community space, or original sculpture that meets assigned specifications. Students can easily share the link to their saved creation for an online class gallery. For added fun, students can also participate in online challenges like the [#TinkerTogether Create a Dinosaur](#)

Challenge or enter their original design in the Tinkercad Distance Learning Contest (deadline June 1, 2020).

- Tinkercad Circuits
  - **Description**: Electrical circuits simulator that allows users to virtually experiment with components. Tutorials and videos are available to help explain complex electrical engineering concepts. More instructional materials can be accessed on the Tinkercad Teacher webpage (where you can create a Tinkercad classroom and access lessons).
  - Overview Video (YouTube)
  - **Compatibility**: Works on any Internet-enabled device
  - **Content Tag**: multidisciplinary, art, computer science, CTE/STEM, math, science
  - **Standards**: Common Core, ISTE, and NGSS aligned
  - **Distance Learning Integration Ideas**: Ask students to watch the overview video and complete the Tinkercad Circuits Getting Started tutorials. Reinforce key electrical engineering and science concepts by asking students to complete the Tinkercad Circuits Skill Builder activities. Encourage students to dive deeper into advanced concepts with Becky Stern's Tinkercad Circuit tutorial video series that combines breadboards, microcontrollers, and computer programming.

Virtual Tours and Field Trips

(available via Google Arts & Culture or individual museum/heritage websites)

Send your students on a virtual field trip anywhere in the world, including interactive virtual tours of museums and national parks. Encourage deeper learning by asking questions that connect virtual observations to content or key concepts. Consider asking students to reflect not just on what they saw or learned, but also what they would like to learn more about. Add fun by creating an "I Spy" challenge for students to complete. Create flashcards using Quizlet to reinforce concepts. Add accountability by creating a summative quiz using Kahoot! Or GoogleForms.

Content Tag: multidisciplinary, art, CTE/STEM, language arts, math, social studies, science

- **Africa**
  - [Johannesburg Art Gallery Virtual Tour](#) (Johannesburg, South Africa)
  - [PBS Virtual Field Trip Video and Teacher Guide](#) (Africa)
- **Asia**
  - [Great Wall of China Interactive Virtual Tour](#) (China)
  - [National Museum of Modern and Contemporary Art Interactive Virtual Tour](#) (Gwacheon-si, South Korea)
  - [Tokyo National Museum Interactive Virtual Tour](#) (Taito City, Japan)
  - [Wonders of Yangzhou Interactive Virtual Tour](#) (Yangzhou, China)
- **Australia**
  - [National Gallery Victoria Interactive Virtual Tour](#) (Melbourne, Victoria, Australia)
  - [Uluru-Kata Tjuta National Park Virtual Tour](#) (Australia)
- **Europe**
  - [British Museum Interactive Visual Timeline of the World](#) (London, U.K.)
  - [Louvre Museum Interactive Virtual Tour](#) (Paris, France)
  - [Musée d'Orsay Interactive Virtual Tour](#) (Paris, France)
  - [Rijksmuseum Interactive Virtual Tour](#) (Amsterdam, Netherlands)
  - [Uffizi Gallery Interactive Virtual Tour](#) (Florence, Italy)
  - [Valley of the Temples - Parco Valle dei Templi Agrigento](#) (Sicily, Italy)
  - [Vatican Museums Interactive Virtual Tour](#) (Vatican City, Rome, Italy)
    - [Gregorian Egyptian Museum](#)
    - [Gregorian Etruscan Museum](#)

- - - Raphael's Rooms

    - Sistine Chapel

- **North America**

  - National Gallery of Art Virtual Tour (Washington D.C., U.S.)

  - National Portrait Gallery Virtual Tour (Washington D.C., U.S.)

  - Smithsonian National Museum of Natural History Interactive Virtual Tour (Washington D.C., U.S.)

    - Virtual Tour of Entire Museum

    - Current Exhibits

    - Past Exhibits

    - Museum Support and Research Center Behind the Scenes

    - Smithsonian Castle and Hirshhorn Sculpture Garden

  - Statue of Liberty National Monument Virtual Tour (New York, New York)

  - NASA

    - NASA Access Mars: Interactive Virtual Trip with Curiosity Rover's 3D Replica of Martian Surface

    - NASA Glenn Research Center Virtual Tour with Interactive Map and Videos (Cleveland, OH)

    - NASA Hubble Space Telescope Mission Operations Center Virtual Tour (Greenbelt, MD)

    - NASA + Boeing Johnson Space Center Virtual Field Trip & Educator's Guide (Houston, TX)

    - NASA Langley Research Center Virtual Tour with Interactive Map and Videos (Hampton, VA)

    - International Space Station UStream Live Web Cam

- **Central America**

  - Exploring the Mayan World Interactive Virtual Tour (Belize, Guatemala, Honduras, Mexico, Nicaragua)

- - [Museo Frida Kahlo Virtual Tour](#) (Ciudad de México, México)
- **South America**
  - [Instituto Brasileiro de Museus Interactive Virtual Tour](#) (Brasilia, Brazil)
- **Hawaiʻi**
  - [Hawaiʻi State Capitol Virtual Tour](#) (Honolulu, HI)
  - [Iolani Palace Interactive Virtual Tour](#) (Honolulu, HI)
  - [Shangri La Museum of Islamic Art & Culture Interactive Virtual Tour](#) (Honolulu, HI)

National Park Services Web Cameras

Send your students to conduct virtual fieldwork at a national park. Observations can be used as an art/writing prompt or opportunity to employ scientific method. Encourage deeper learning by asking questions that connect virtual observations to content or key concepts. Consider asking students to reflect not just on what they observed, but also what they would like to learn more about. Encourage students to keep track of their observation using a journal to draw and write about what they saw. Challenge students to observe over multiple days or regular intervals and document the changes that they see.

Content Tag: multidisciplinary, language arts, math, social studies, science

- **Grand Canyon National Park Cameras (Arizona)**
  - [South Rim View from Yavapai Point](#)
- [Volcanoes National Park Web Cameras (Hawaiʻi)](#)
  - **Kīlauea Summit Cameras**
    - [Kīlauea Halemaʻumaʻu and water lake](#)
    - [Kīlauea Thermal Image of Halemaʻumaʻu and water lake](#)
    - [Kīlauea Caldera from Observation Tower](#)

- - - **Kīlauea East Rift Zone Cameras**

    - [Kīlauea Hōlei Pali](#)

    - [Kīlauea Puʻu ʻŌʻō West Flank](#)
    - [Kīlauea Puʻu ʻŌʻō South Flank](#)
    - [Kīlauea Puʻu ʻŌʻō East Flank](#)
    - [Kīlauea Mobile Cam 3](#)

  - **Mauna Loa Cameras**

    - [Mauna Loa Upper Part of Mauna Loa Southwest Rift Zone](#)
    - [Middle of Mauna Loa Southwest Rift Zone](#)
    - [Mauna Loa Northeast Rift Zone from Observation Tower](#)
    - [Mauna Loa South Pit from Mokuʻāweoweo South Rim](#)
    - [Mauna Loa Mokuʻāweoweo Caldera from South Rim](#)
    - [Mauna Loa Mokuʻāweoweo Caldera from the Northwest Rim](#)
    - [Mauna Loa Mokuʻāweoweo Caldera Thermal from the Northwest Rim](#)

- **Yellowstone National Park Cameras (Idaho, Montana, Wyoming)**

  - [Old Faithful and the Upper Geyser Basin Live-stream Webcam](#)

Aquarium, Wildlife, and Zoo Web Cameras

Encourage students to observe web camera live streams of aquariums, wildlife, or zoos to hone in on their powers of observation. Observations can be used as an art/writing prompt or opportunity to employ scientific method. Ask students to choose one animal and collect behavioral data using an ethnogram ([London Zoo template](#); [Woodland Zoo template](#)). Follow up with reflective questions to encourage students to analyze and interpret their data. Extend by asking students to plot their data in [Google Sheets](#) and share with their classmates online. Also consider using some of the fun activities found in [Smithsonian National Zoo's "Animal Webcam Activities" guide](#).

Content Tag: multidisciplinary, art, CTE/STEM, language arts, math, social studies, science

- [Alaska Department of Fish & Game Live Web Cameras](#)

- - Round Island walrus cam

  - Alaska Fish & Game's salmon cam

  - Cornell Lab of Ornithology's Pacific Loons cam in Anchorage (May to August nesting and rearing season only)

  - Katmai National Park and Preserve bear cams (early June to October)

  - Pratt Museum's Gull Island cam (May through August only)

  - University of Alaska Fairbanks' sea ice cam in Barrow

  - U.S. Forest Service's fish/beaver cam at Mendenhall Glacier

- Zoo Atlanta Live Web Camera

  - Panda

- The Cornell Lab of Ornithology "All About Birds Live Cams"

  - Barred Owls (Indianapolis, IN)

  - Bermuda Petrels (Nonsuch Island, Bermuda)

  - Cornell FeederWatch Cam (Ithaca, New York)

  - Hellgate Ospreys (Missoula, Montana)

  - Ontario FeederWatch Cam (Ontario, Canada)

  - Panama Fruit Feeders (El Valle de Antón, Panama)

  - Red-tailed Hawks (Ithaca, New York)

  - Northern Royal Albatross (Taiaroa Head, New Zealand)

  - Sapsucker Woods Pond Cam (Ithaca, New York)

  - Savannah Ospreys (Savannah, Georgia)

  - West Texas Feeders (Fort Davis, Texas)

- Georgia Aquarium Live Web Cameras

  - Underwater Puffin

  - African Penguin

  - Ocean Voyager

- Jellyfish
- Piranha
- Beluga Whale
- Indo-Pacific Barrier Reef
- Southern Sea Otter
- California Sea Lion

- Honolulu Dolphin Quest Pre-recorded Video Archives
  - Dolphin Encounters
  - Dolphin Births
  - Dolphin Babies Training
  - Scientific Studies
  - Highlight Videos

- Houston Zoo Live Web Cameras
  - Giraffe
  - Gorilla
  - Elephant
  - Leafcutter Ant
  - Rhinoceros
  - Chimpanzee

- Maryland Zoo Live Web Cameras
  - Penguin (including feeding times at 10:30am and 3:30pm EST every day)
  - Lion
  - Giraffe (including feedings from 11am – 2pm)
  - Flamingo
  - Goat

- Memphis Zoo Live Web Cameras

- - Panda
  - Hippo
  - Elephant
- Monterey Bay Aquarium Live Web Cameras
  - Aviary
  - Coral Reef
  - Jellyfish
  - Kelp Forest
  - Monterey Bay
  - Moon Jellyfish
  - Open Sea
  - Penguin
  - Sea Otter
  - Shark
- San Diego Zoo Live Web Cameras
  - Panda Pre-recorded Archive
  - Baboon (Africa Rocks)
  - Penguin (Africa Rocks)
  - Polar Bear (Northern Frontier)
  - Ape (Lost Forest & new baby!)
  - Koala (Outback)
  - Giraffe and Rhino (Safari Park)
  - Burrowing Owl (Safari Park)
  - Elephant (Safari Park)
  - Tiger (Safari Park)
  - Condor (Safari Park)
- Smithsonian National Zoo Live Web Cameras

- Naked Mole-rat Cam

- Lion Cam

- Giant Panda Cam

- Elephant Cam

Citizen Science Networks

Challenge your students to participate in a citizen science network, which will encourage them to observe and communicate the science they find around themselves. Each network has observation protocols and guides to help aid citizen scientists in data collection.

Content Tag: multidisciplinary, language arts, math, social studies, science

- iNaturalist

  - **Description**: iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society. This citizen science project is an online social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe. iNaturalist may be accessed via its website or from its mobile applications. Alternatively, this diverse, visually-rich database can be used as a unique research tool for students to learn more about biodiversity in Hawai'i. Checkout their YouTube channel to see interviews with scientists all over the world and learn how crowdsourced data is helping scientists to better understand our world.

  - Overview Video (YouTube)

- Cornell Lab of Ornithology

  - **Description**: The Cornell Lab of Ornithology is a member-supported unit of Cornell University in Ithaca, New York which studies birds and other wildlife. Dedicated to advancing the understanding and protection of the natural world, the Cornell Lab joins with people

from all walks of life to make new scientific discoveries, share insights, and galvanize conservation action. Join one of their [projects](#) and begin adding your observations to the growing data set to help scientists around the world.

- [Overview Video](#) (YouTube)

- [BudBurst](#)

  - **Description**: Chicago Botanic Garden's Budburst brings together researchers, educators, gardeners, and citizen scientists on a shared journey to uncover the stories of plants and animals affected by human impacts on the environment. We hope that sharing these stories will increase appreciation of plants and the natural world and inspire conservation action. Create a free account to access BudBurst through an online browser or download app, choose a plant to observe, follow recommended observation protocols, and submit observations to the growing scientific database.

  - [Overview Video](#) (YouTube)

- [USA National Phenology Network (USA-NPN)](#)

  - **Description**: The USA-NPN brings together citizen scientists, government agencies, non-profit groups, educators and students of all ages to monitor the impacts of climate change on plants and animals in the United States. Create an account and use USA-NPN's "Nature Notebook" web-based tool to track observations and join a regional campaign to help scientists in our community.

  - [Overview Video](#) (YouTube, also available on website)

- [The Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS)](#)

  - **Description**: Colorado State University's CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow). By using low-cost measurement tools, stressing training and education, and utilizing an interactive Website, their aim is to provide the highest quality data for natural resource, education and research applications across the U.S. Each time a rain storm crosses your area, volunteers take measurements

of precipitation from as many locations as possible (see equipment list online). These precipitation reports are then recorded on the website. The data are then displayed and organized for many CoCoRaHS scientists to analyze and apply to daily situations ranging from water resource analysis and severe storm warnings to neighbors comparing how much rain fell in their backyards.

  - [Overview Video](#) (YouTube)

- [Citizen Sky](#)

  - **Description**: American Association of Variable Star Observers' (AAVSO) Citizen Sky project connects a [wide-range of astronomy enthusiasts](#) who want to make observations about variable stars, which are stars that change measurably in brightness. You don't even have to have a telescope! Choose one of the [AAVSO guides](#) to help you make the most of your available equipment and begin sharing your observations to contribute to the growing data set.

  - [Overview Video](#) (YouTube)

- [Zooniverse](#)

  - **Description**: The Zooniverse is the world's largest and most popular platform for people-powered research. It contains [a database of hundreds of multidisciplinary citizen science projects](#) that range from art, biology, climate, history, language, literature, medicine, nature, physics, social science, and space. This research is made possible by volunteers — more than a million people around the world who come together to assist professional researchers. Their goal is to enable research that would not be possible, or practical, otherwise. Zooniverse research results in new discoveries, datasets useful to the wider research community, and many publications. View the [Educator's Guide](#) to learn more about how these projects can be integrated in your classroom to support student learning and further Zooniverse efforts.

  - [Overview Video](#) (YouTube)