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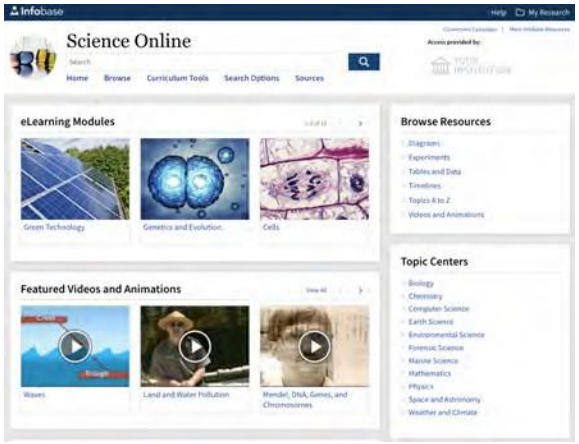
Trial Access
Instructions


# *EDUCATOR'S GUIDE*

***Science Online*** is an award-winning resource that includes expansive coverage of all areas of science through a full range of discipline-specific entries and articles, images, videos, timelines, tables, experiments, charts, and diagrams. Expertly researched and written content from a wealth of proprietary print titles with more than 75 years of expert scholarship and authorship provide valuable information and insight for students and educators. ***Science Online*** contains all of the essential information users need to research, study, and explore science, delivered not only textually but also visually and interactively, making it an ideal resource for facilitating STEM research and learning for all students, regardless of their academic ability or individual learning preferences.

## ***Science Online*** will help students to:

- find science-related information quickly and efficiently
- gather facts in order to develop a hypothesis
- support or challenge a hypothesis with evidence, data, and experimentation
- relate what they learn in the classroom to real-world science
- utilize critical thinking skills while analyzing data
- use textual information along with multimedia (videos, interactives, etc.) to develop a deeper understanding of scientific concepts




## Feature Highlights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1. Dynamic citations in MLA, CMS, Harvard, and APA formats, plus export to EasyBib
2. Authentication options such as library bar code, IP address, and Referring URL
3. A variety of integration options and partners, including Schoology, Canvas, D2L (Desire2Learn), itslearning, Follett One Search, and many others
4. Google Tools for Educators: Sign in with Google, Share to Google Classroom; Save to Google Drive; Google Translate (100+ languages)
5. Search by standards: state, provincial, international, Next Generation Science Standards, and IB Organization standards to find correlating articles

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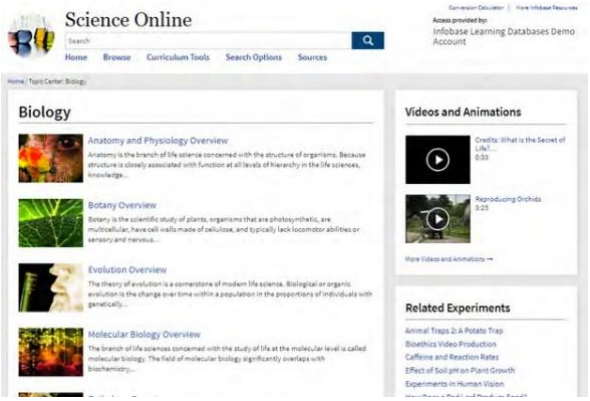
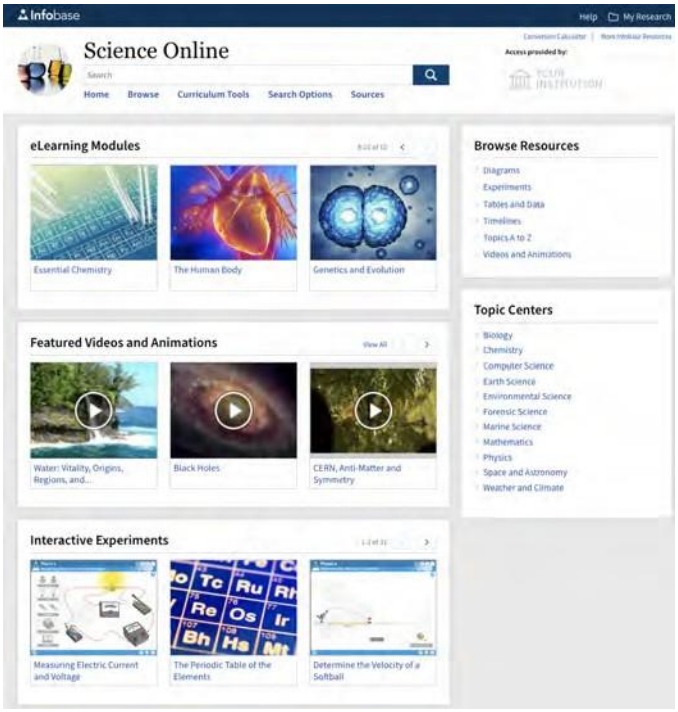
## A Wealth of Content Curated Specifically for Students

1. **68,000+ Informative Articles**, Including Biographies, Book Chapters, Chronologies, Contributor Pages, Definitions, Encyclopedia Entries, and Journal Articles
2. **11 Specially Selected Topic Centers** Guide Students through the Most Researched Scientific Disciplines
3. **6,500+ Video Clips and Animations**, Many Specifically Produced for *Science Online* and Not Available Elsewhere
4. **Nearly 2,400 Full-Color Science Diagrams** Provide Visual Representation of Important Scientific Principles
5. **150 Informative Tables** Displaying Relevant Data on a Number of Science-Related Topics
6. **Nearly 1,600 Downloadable, Printable Science Experiments and Activities** in PDF Format
7. **30+ Interactive Experiments** Replicate the In-Class Laboratory Experience in a Virtual Environment
8. **Curriculum Tools for Students and Educators:** Science Fair Guide, Conducting Experiments, and More





## Engaging Home Page




**The *Science Online* Homepage offers quick and easy access to all of the best and most useful content, providing both educators and student researchers with an enjoyable user experience.**

eLearning Modules

Featured Videos and Animations

Interactive Science Experiments

Featured Diagrams

Featured People (Biographies)

Links to All Resource Types

Links to All Topic Centers

Conversion Calculator

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# Engage Students with Easily Accessible Multimedia and Interactive Content

## Use Videos to Enhance the Learning Experience

***Science Online*** includes more than 6,500 video clips, many specifically produced for ***Science Online*** and not available anywhere else, to help reinforce visual learning, stimulate interest, and provide convenient overviews and discussion starters. All videos include full-text, searchable transcripts that are displayed directly below the video player. Each video also includes a dedicated record URL for online sharing, closed captions in English, and exact run times.



## Engaging Virtual Lessons Reinforce Important Science Concepts

***Science Online*** includes over 300 interactive science lessons built around specific learning objectives in biology, chemistry, and physics, and containing a combination of engaging multimedia and standards-based activities for students to complete. Topics include:

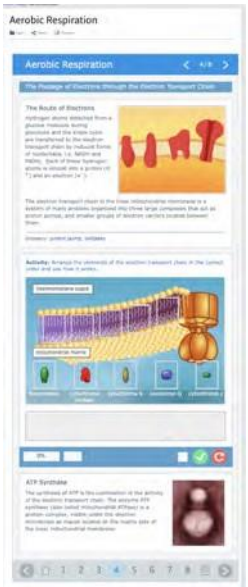
- *Viral Diseases*
- *Organization of DNA in Chromosomes*
- *States of Matter*
- *Periodic Trends in the Chemical Properties of Elements*
- *Work and Power of Electric Current*
- *Bernoulli's Principle*
- *Chemical Elements of the Cell*
- *The First Law of Thermodynamics*
- *Effects of Human Activity on Ecosystems*

## Interactive Science Experiments: Perfect for Remote Learning

***Science Online*** features more than 1,600 science experiments and activities, including more than 30 engaging interactive experiments that replicate the in-class laboratory experience in a safe and user-friendly environment. Each interactive experiment is self-paced and includes step-by-step instructions, a list of materials needed (great for moving the experiment to an actual lab setting), and a helpful table for students to record their findings. These experiments are perfect for whenever a physical science lab is unavailable or when remote learning is the only option.

Titles include:

- Accuracy of Labeling Vitamin C in Orange Juice
- Bright Light and Photosynthesis
- Heat Flow Through Liquids and Gas
- Measuring Electric Current and Voltage
- Newton's Second Law of Motion
- Salt Lowers the Freezing Point of Water
- The Periodic Table of the Elements
- A Very Hot Spot (Greenhouse Effect)

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# Lesson and Project Ideas for Educators Using *Science Online*

***Science Online*** is an ideal resource for students and educators to use for science fair projects, research papers, and essays, along with lab-based and virtual science experiments. In addition to the more than 1,600 experiments found in the database (under the "Resources" tab on the homepage), here are a number of suggestions for using ***Science Online*** both in and out of the classroom.

## Classroom-Based Lesson and Project Ideas

**Wow, That's a Super [3-D] Model** A 3-D model can provide great insight by requiring students to examine all aspects of a subject. For example – a 3-D model of the brain or heart can give students a different perspective and greater understanding of how those organs work as opposed to just viewing a photo. Working in pairs of in groups, have students choose one of the diagrams in *Science Online* and create their own 3-D version of their chosen diagram using Play Doh or modeling clay, along with any other materials that are available. Ask students to label specific areas in accordance with what they see in the diagram and then share their model with the rest of the class.

**Crime Scene Investigation** Forensic science remains a very engaging science topic for students. Studying about evidence, fingerprints, DNA, etc., can help students understand the science behind solving crimes. Divide the class into groups and create a crime scene scenario. Provide an incident (stolen wallet or dog), present evidence, characters, etc. Give the students clues – some good, some non-related, and see who can solve the crime. Use the "Forensic Science" topic center in *Science Online* for information on how to solve the crime. This project will promote both critical thinking skills as well as teamwork.

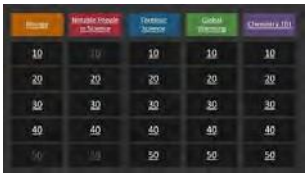

**What State Are We In?** This is a fun but challenging activity during which students get to test their ability to identify solids, liquids, and gases based on their understanding of this topic after learning about it in *Science Online*. First, divide students into groups and ask each group to create 20-30 flash cards, each of which should include the name of an object or substance on one side, and its state of matter on the other. These should be a mixture of easy examples (school bus, water, and helium, for instance), along with more challenging ones, such as Jell-O, hand sanitizer, steam, etc. Each group will compete against another group in several "heats" or rounds by trying to correctly identify more of the other group's flash cards. Lower scoring groups from each heat/round are eliminated until the top two groups compete and a winner is declared.


**Topic-of-the-Month Club** This activity is designed to teach students valuable research skills and can be repeated each month using a different topic center from *Science Online*. Beginning with the "Biology" (or another) topic center, direct students to the section titled "Suggested Research Topics" and ask each student to select a unique topic from the list, meaning that no two students should be selecting the same one. From there, students will use *Science Online* and any other available resources to research their topic and write a report according to pre-established requirements (number of pages, citation format, etc.). As needed, use the Curriculum Tools such as "Avoiding Plagiarism," "Evaluating Online Sources," "Writing a Research Paper," etc., to remind students not to copy someone else's work, to choose their sources carefully, and to thoughtfully complete each step in the research process. OPTIONAL: After a few months, reward students who have consistently written the best papers with the option to choose other possible assignment options such as a 3-D model, a video, a poster, etc.

**Safety First** A critical part of conducting science experiments is making sure students understand that safety is the most important thing to consider prior to working in a science lab. Things can easily go wrong very quickly when performing an experiment: materials can spill, beakers can break, or objects can catch on fire. For that reason, it is essential to always review the safety guidelines that are presented in *Science Online* before each experiment is performed. Under "Curriculum Tools" on the homepage, the article "Conducting Experiments" pulls together safety information for working in a lab setting and conducting experiments. Share this article as it is, or create your own document based on the information presented in the article that can be distributed to your students before working in a science lab. Quiz the students on lab safety before conducting any experiments or completing any activities to make sure that they know how to handle any situations that may arise.

# Lesson and Project Ideas for Educators Using *Science Online*, cont'd.

## More Classroom-Based Lesson and Project Ideas



**Game On!** Who doesn't love playing games? This activity can be used as a review at the end of a lesson, or to prepare students for an upcoming quiz or test, or just as a fun, educational activity for whenever time allows. Using content from *Science Online* and a standard PowerPoint game template, choose a science-related subject area and create a Jeopardy-style game featuring a series of questions and answers, all of which should link back to *Science Online*. Divide the class into several teams and encourage students to work together with the other members of their team to answer the most questions. OPTIONAL: Award small prizes such as candy or a homework pass to the members of the team that answers the most questions correctly.

**Science Is All About People** From the "Featured People" slider on the homepage, have students each select one of the featured people from a specific category, such as Computer Scientists, American Women Scientists, Environmentalists, etc. More than one student may choose the same person if there aren't enough people in a given category for each student to choose a different one. Students should research this individual using *Science Online* along with any other available sources and produce a report of this person's life and accomplishments, with particular emphasis on how their work has impacted our lives to this day. As needed, use the Curriculum Tools such as "Avoiding Plagiarism," "Citing Sources," and "Evaluating Online Sources" to remind students not to copy someone else's work and to choose and cite their sources carefully. This activity may be repeated multiple times throughout the school year by choosing a different category each time.

**It's Science Fair Time!** *Science Online* includes nearly 1.600 printable science experiments that tap into every interest imaginable. Invite each student to select one of the science experiments based on their own interests, or assign one to any students who cannot decide for themselves. For students who choose their own experiment, you may wish to offer some guidance or suggestions as needed. In addition, all students should be directed to the article "Science Fair Guide" under Curriculum Tools to keep them on the right track and ensure their success. Provide ample time both in class and at home for students to complete their projects, reminding them to create a flat or tri-fold display board explaining what their project is all about along with designing the project itself. On "Science Fair" day, instruct students to set up their projects around the classroom, and enlist the help of other teachers in your building to serve as judges. Award a ribbon and/or small prize for first, second, and third place.

**You Gotta See This!** *Science Online* includes thousands of video clips that reinforce visual learning, stimulate interest, and provide convenient overviews and discussion starters. Using the available videos as a guide, students may work alone or in pairs or groups to create a video of their own that deals with a science-related subject of interest. For example, students may capture video footage of a family pet or an outdoor animal such as a squirrel or a rabbit and present commentary about the behaviors of that animal. Other options may include weather events, human interactions, plant species, or any one of dozens of subjects that may interest them. Students should remember to use information found in Science Online to support their topic and any narration or commentary offered during the video. Once completed, students should share their videos with the rest of the class.

**Additional Suggestions:** Write a summary and/or create an outline of an assigned article; Draw a diagram of a science-related concept using the available diagrams as a guide; After reading an article or a series of articles on a given topic, write down several questions about the article and quiz each other; research and present on a science-related (or specifically a STEM) career.

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# Help for Educators Using *Science Online* for Distance Learning

***Distance Learning*** allows you to continue the learning process anytime, anywhere. The virtual learning experience plays a key role in education and offers students another way to learn, connect and excel. Since Infobase's online resources are available 24/7, they are an ideal solution for your student's distance learning needs, offering access to curated content whenever and wherever they need it. Boasting easily accessible and engaging content and a user-friendly interface, our online resources make distance learning easy and stress-free. Below are some ideas and suggestions on how ***Science Online*** can work in a virtual classroom setting.

## Start Your Distance Learning Journey with eLearning Modules

*Science Online* features ten science eLearning modules, each of which provides an in-depth exploration of a core science subject, beginning with extensive sequential articles in a narrative format that students can easily read and study on their own. Each module also includes some or all of these

added features to further support your remote learning efforts:

- Key Videos and Animations
- Diagrams and Images
- Glossaries
- Teacher Lesson Plans (Learning Objectives, Discussion Questions, and Assessment Questions)


## Creative Distance Learning Lesson and Project Ideas

**Plant a Garden** Students should select a small number of produce items (no more than two or three) suitable to grow based on their local climate and conditions, and either plant them in their yard or grow them indoors if it's too cold outside. Students should monitor the growth of these items and create a chart and/or a written report detailing the rate of growth by specific milestones (one week, two weeks, etc.) that will eventually be shared virtually with their teacher and classmates.

**Be the Next "Science Guy/Girl"** Choose a topic or scientific principle of interest from *Science Online* and create a video of yourself explaining this topic or principle to others as if you were the host of a science-based television show. Try to have fun and be as goofy or offbeat as possible. Once completed, post your video on a class website/YouTube channel, or share it via social media.

**Botany in My Backyard** Plants are everywhere! Invite your students to become amateur botanists by searching their backyard or nearby fields or wooded areas for an unusual species of plant. Students should select one, take a photo of it, and research the plant using *Science Online* and other online sources. Write a detailed report about the plant and submit it, along with the photo, to the teacher via Google Classroom, email, or other electronic means.

## Use Science Online to Extend Learning Beyond the Classroom

- Assign one or more of the **interactive science lessons** to your students (see page 3 of this guide for more information), either collectively to review or reinforce previously taught concepts, or individually to students who are behind or ahead of the others
- Direct students to complete any one of the 30+ self-guided, engaging **interactive science experiments** (see page 3 of this guide for more information) in lieu of a physical lab experience. Some of them can even be recreated at home using real materials!