



Science Spotlight: Online Resources



Presented by
Tracy Trimpe

K8 Science Update @ WIU

April 20, 2012

E-mail: ttrimpe@sciencespot.net

Website: <http://sciencespot.net>

Links are available at

<http://sciencespot.net/Pages/scienceonline.html>

Online Resources for Learning

- **Length**

- Mini labs/simulations - 15 minutes or less
- Games - 1 or more class periods

- **Technology**

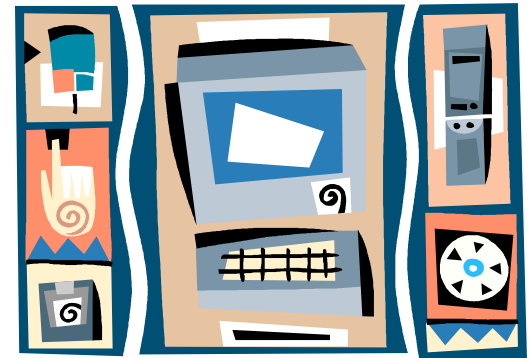
- Complete learning units vs. integrated with classroom activities
- Whole group instruction vs. independent activities

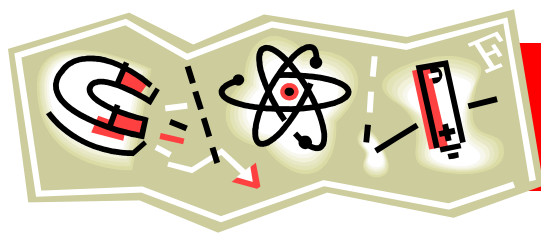
- **Engagement**

- Fully engaged vs. limited engagement
- Focused on student learning

- **Ability Levels**

- Special education or special needs
- Enrichment activities





Physics

Infinite Potential

Explore energy-related concepts with these modules from the JASON website.

Operation:
INFINITE POTENTIAL
Restructuring the Energy Portfolio

Objective: Go to Page:

Understand the types, forms and transformation of energy and our global dependence on energy resources to shape an effective strategy for the future.

Mission 1
Critical Current: Defining Energy

Mission 2
Waves of Change: Calculating Transfers and Transformations

Mission 3
Power to the People: The Current State of the Grid

Mission 4
Energy Independence: The Quest for Sustainable Resources

Mission 5
Energy Security: Powering Our Future

Key Links:

Operation Overview Video

Get Started:
Get ready for your mission by watching the video, then check out the other resources on the right.

Edheads **simple machines**

The House

The Tool Shed

EdHeads – Simple Machines & Compound Machines

Learn about simple and compound machines using these interactive games. Also check out [Crash Science](#).

Also available ...

[Simple Machines worksheet](#)
[Science Spot: Simple Machines Links](#)

JASON Science
Education through Exploration

JASON Mission Center Login
username:
password:
Register · Help Log On

Other JASON Curricula

Operation: Infinite Potential

JASON Home > What is JASON? > Curriculum > Operation: Infinite Potential

Learn more...

[Operation Overview](#) | [Meet the Team](#) | [Videos](#) | [Games and Digital Labs](#) | [Standards](#)

Rapid energy transfer is the key to roller coaster thrills but be careful - too much kinetic energy and you'll crash, too little and you'll stall. Students use their knowledge of potential energy and kinetic energy to design their own coaster. Only the most skilled *Coaster Creators* make it onto the competitive leaderboard! Teachers, don't forget to check out the downloadable resources for educators, available in the JASON Mission Center.

Create a free account in the JASON Mission Center (or log in now) and play!

Students will:

- Design their own coaster cars to create a unique coaster. Anyone care to take a ride on the Blazing Blue Shark?
- Make a track from scratch where they have to have just the right amount of energy to get the coaster going but make sure it stops in time!
- Engage in a fun, meaningful exercise that translates the complexity of potential and kinetic energy

Coaster Creator

See if you can build a thrilling and safe coaster now!
[Play Coaster Creator](#)

[Coaster Creator \(JASON\)](#)

Learn the physics behind roller coasters by creating a thrilling ride!



<http://www.funderstanding.com/coaster>

Interactives Choose One

AMUSEMENT PARK PHYSICS
What are the forces behind the fun?

You've bought your ticket and boarded the roller coaster. Now you're barreling down the track at 60 miles per hour, taking hairpin turns and completing death

[Amusement Park Physics](#)

Explore the physics behind some of the most popular amusement park rides.

Other sites ...

[Shockwave Physics](#)

[Nobel Prize – Physics](#)

[Junkyard Wars Games](#)

[Energy Quest](#)

[Electro City](#)

[iknowthat.org Optics](#)

[Exploratorium Online](#)

[Little Shop of Physics](#)

[FOSS Web Activities](#)

F Flourine

Atomic Number: 9
Atomic Mass: 19

Chemistry

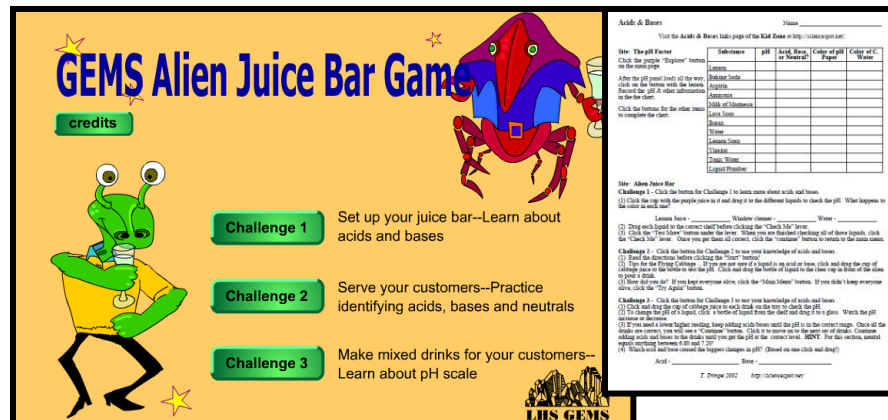
N Nitrogen

Atomic Number: 7
Atomic Mass: 14.01

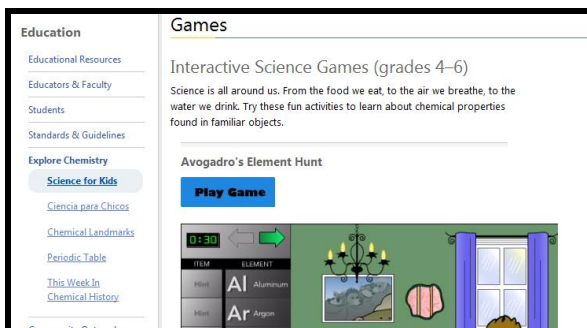


Toxic Mystery

Learn about toxic substances that can be found in a home.



Explore acids and bases with this activity from LHS Gems.



American Chemical Society Games

Use these games to investigate elements, atoms, and more!

Other Chemistry Links ZOOM Kitchen Chemistry

ChemBalancer

Balancing Equations

Strange Matter

IPPEX Online – Matter

PhET Simulations

Paul's Quest (Polymers)

JLab Games & Activities



Earth Science

Operation: MONSTER STORMS
Exploring the powerful forces of weather

Objective:
To study, understand, and prepare for Earth's dynamic weather systems and their impact on society.

Go to Page: **Go**

Mission 1
Profiling the Suspects: Trouble Brewing in Earth's Atmosphere

Mission 2

Mission 3
The Chase: On the Run in Tornado Alley

Mission 4
The Hunt: Flying Into the Eye

Mission 5

Get Started:
Get ready for the video. Then jump in by clicking **Download Free Curriculum** to the right!

Operation Overview Video

Key Links:

Monster Storms

Students learn about hurricanes as they analyze satellite images and storm data to predict the path and magnitude of an approaching storm. Check out their great [curriculum resources](#).

EdHeads WEATHER

Report the Weather
Follow along with the Weather-Tron 3030 to help Report the Weather

Predict the Weather
Take over the Predict the weather three...

activity ho

EdHeads – Weather

Challenges students to report the weather and develop a forecast.

Other weather sites ...

[Discovery Channel Tornado](#)
[Scholastic Interactive Weather Maker](#)

[Weather Flash](#)

[Nat Geo Kids Wildest Weather](#)

PREVIEW SITE!

Operation: TECTONIC FURY

Unlocking Earth's Geologic Mysteries

Objective:
Learn how Earth works and how it has changed over the last several billion years.

- Meet Walter Smith
- Mission Briefing 4: Earth on the Move
- Landform Detectives
- The Rock Cycle
- Classifying Rocks
- Rock Match
- Minerals Used in Your Home
- Content Summary Grid (PDF)
- Argo Field Updates
- Emily Judah's Argo Reflections
- Argo Reflections (En Espanol)

Get Started:
Get ready for your mission by watching the video, then check out the other resources on the right.

Operation Promo Video

Tectonic Fury

Explore plate tectonics, rocks, and minerals with digital labs from this series.



Digital Labs

Martian History Mystery
Unit 2 - How old is Mars? It's not an easy question. Luckily you can figure out the ages of Mars' surface by looking at various landforms like riverbeds, impact craters, and even volcanic eruptions! Roll out your maps of Earth and Mars and get ready to solve the Martian History Mystery! [more info](#)
[Play Now!](#)

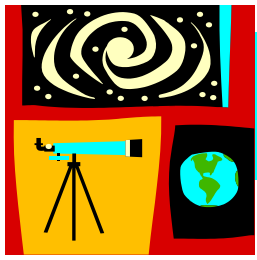
Extreme Microbes
Unit 3 - What does it take to survive on Mars? You'll find out in this lab as you design a microbe and release it on the Martian surface. Will it survive or perish? Your design of an extreme microbe will be key! [more info](#)
[Play Now!](#)

Earth Systems
Earth systems science, including the hydrosphere, carbon cycle, volcanism and tectonics, the cryosphere and biosphere. [more info](#)
[Play Now!](#)

Mysteries of Earth & Mars Explore the history of Mars and see how it compares with Earth

Other Earth Science sites ...

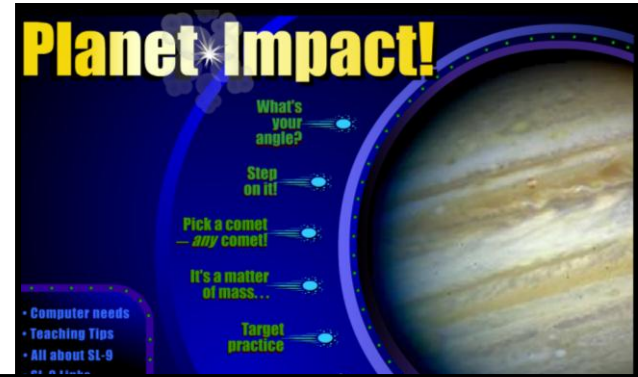
- [Learner.org Volcanoes](#)
- [PhEt Simulations for Earth Science](#)
- [Ology – Earth Science](#)
- [Ology – Paleontology](#)
- [Earthquakes for Kids \(USGS\)](#)
- [Earthquake Simulator](#)
- [Virtual Volcano](#)
- [Extreme Geology Challenge](#)



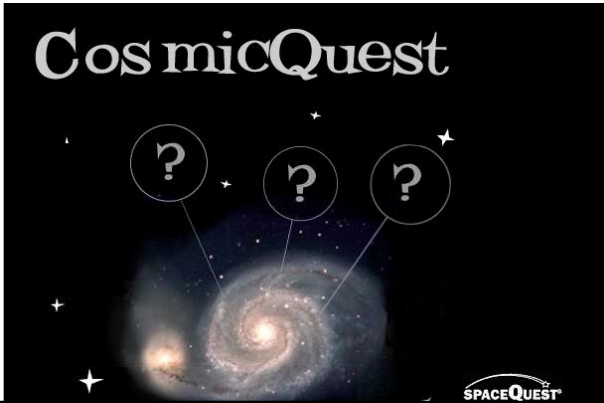
Astronomy



Students find a planet and develop it for human habitation.



Students investigate gravitational forces involved in a comet impact. Also check out the other [Amazing Space](#) adventures!



Students can design a Space Station or join an expedition to the North Pole.

Other links for Astronomy ...

[NASA Kid's Club](#)

[NASA Interactive Features Archive](#)

[Explore the Solar System](#)

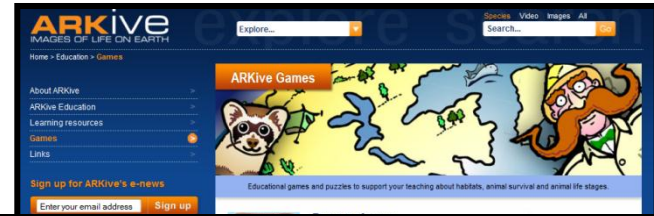
[Planet 10 – Solar System](#)

[Search for ET](#)

[Ology – Astronomy](#)

[Smithsonian – Sizing Up the Universe](#)

Life Science: Ecology & Biology



ARKive

This site offers online games and learning resources for an assortment of biology topics.

Other life science sites ...

[Great Plant Escape](#)

[Field Museum – This Old Habitat](#)

[A Walk in the Woods](#)

[Nab the Aquatic Invader](#)

[Shedd Aquarium Interactives](#)

[Ology – Biodiversity](#)

[Microscope Links](#)

[Secrets @ Sea](#)

[Shepherd Software](#)

[Virtualfishtank.com](#)

Operation: RESILIENT PLANET
Protecting Our Ecological Future

Objective:
To investigate the biological, chemical and physical interactions and resiliency of ecosystems, with the goal of ensuring successful conservation and restoration efforts.

Mission 1
Invaders: A Constant Ecological Battle

Mission 2
Survivors: Securing a Niche

Mission 3
Paradise Lost: A Fragile Environmental Recovery

Mission 4
Paradise Found: Earth's Natural Treasures

Mission 5
The Rescue: Protect the Biosphere

Key Links:
Meet the Team, Digital Labs, Videos, Photos

Get Started:
Get ready for your mission by watching the video. Then check out the other resources on the left.

Download Free Curriculum

Operation Overview Video

Operation Resilient Planet

Students join science expeditions with practicing researchers and explorers to learn about ecology and the environment.



Learn Genetics

An excellent site for students to learn about DNA with informative articles and online activities.

Children resemble their parents.

1

DNA FROM THE BEGINNING

Hello, I'm Gregor Mendel. I worked with pea plants because they are easy to grow, and they have many traits that distinguish strains of pea plants from each other. The traits could also be tracked from one generation to the next.

DNA from the Beginning

This site provides genetic information along with a variety of animations and problems to help reinforce student learning.

Nobelprize.org

Check out all the medicine-related activities available on their website.



Other games & activities for genetics...

[GEEE in Genome](#)

[Bugsville \(Download\)](#)

[Dragonfly TV Dog Breeding](#)

[Rigglesfish](#)

[DNA Workshop](#)

[Eye of the Donkey \(PCR\)](#)

[Ology – Genetics](#)

[Microscope Links](#)



N-Squad

Students learn about the effects of alcohol on the human body as they work with the forensic scientists to solve a mysterious death. Teaching materials are also available.

Episode 1: What caused the crash?

Topics: Alcohol, its path through the digestive system, and its affects on the liver

Episode 2: Is Dr. Bryce Dead?

Topics: Absorption, distribution, and elimination of alcohol, BAC, BAC vs. intoxication, gas chromatography

Episode 3: Can you solve the case?

Topics: Factors that influence alcohol use, neurons (structure and function), brain (regions & functions affected by alcohol), teen vs. adult brains; alcoholism; DNA profiling



Reconstructors

Challenge your students to these three cases to help them learn about the helpful and harmful drugs. Teaching materials are also available for each series.



A Plaguing Problem

Five episodes exploring history and biology of pain relievers



Nothing to Rave About

Three episodes investigating the effects of club drugs on the body systems



Uncommon Scents

Three episodes exploring toxic vapors and their effects on the body systems



Check out the mission logs, classroom activities, pre/post tests, & other resources for each mission.

MedMyst

MEDICAL MYSTERIES ON THE WEB



MEDMYST ORIGINAL



MEDMYST RELOADED

MedMyst

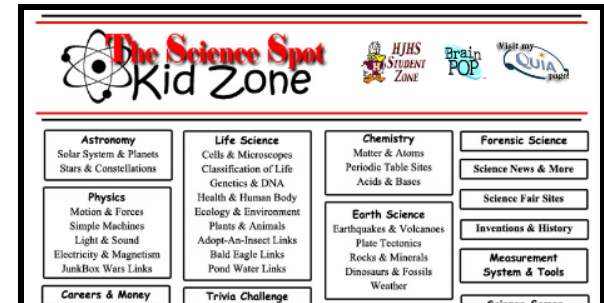
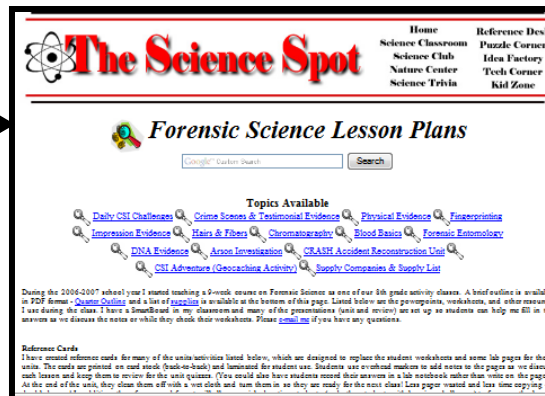
Students learn about infectious diseases and the scientific method as they explore the mysteries available in this module. Don't miss the "for Teachers" area!

CSI Web Adventures

Complete your rookie training and then use your knowledge to solve two cases. Check out the Educators' Guide in the Fun Stuff area along with the Online Activities.



Worksheets for the **CSI Web Adventures** on the Forensic Science page of <http://sciencespot.net/>



Visit the Kid Zone for links for students!



Buffet Busters
Students are introduced to concepts related to food and waterborne infectious diseases as well as basic principles of epidemiology.

Outbreak at Waters Edge
Students investigate an outbreak and determine its source to prevent others people from getting sick.



Other sites ...

[Immune Attack](#) - Players defend a human against bacterial infection

[Science Pirates](#) - Food safety knowledge

[Aspire](#) - Anti-smoking information/games

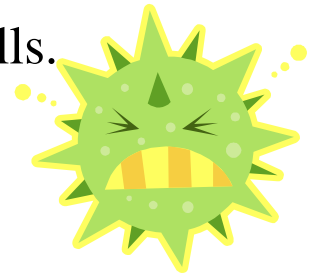
[Quest for the Code](#) – Asthma-related information

[Remission](#) - Players use a nanobot to help the body fighting cancer cells.

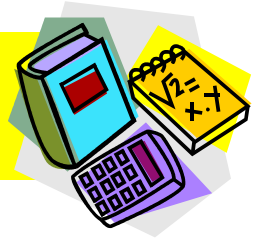
[BlueKids.org](#) – Games for health-education and personal safety

NEW [HHMI BioInteractive](http://www.hhmi.org/biointeractive/) - <http://www.hhmi.org/biointeractive/>

Biology-related interactives and virtual labs



Math Resources



Shodor Interactivate – A large collection of math simulations and interactive activities for every math topic!

National Library of Virtual Manipulatives – One of the best resources for computer-based simulations and tutorials.

NCTM Illuminations – Another great resources for quality math games!

Labyrinth - Math-based puzzles and narrative in which students work to find their lost pet.

Academic Skill Builders – A variety of math games that can be used on a computer or with an Internet connection to a Wii.

Manga Math Games - A collection of free math games for middle and high school students.

Math Playground – Over 15 manipulatives for you to use with your students.

BBC Math Games Wheel – A collection of 12 fun math games that your students will enjoy!

Create-A-Graph – An easy-to-use online tool to make an assortment of graphs!