

RIA  
2012



**teacher supplement**

This Teacher Supplement provides suggestions for incorporating the Reflection in Action: building healthy communities™ (RIA) contest themes into a teacher's classroom curriculum. It also lists online links to health-related and environmental websites that may be useful in investigating a contest entry topic. This is a supplementary resource to the RIA Resource Guide.

[www.reflectioninaction.org](http://www.reflectioninaction.org)

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HEALTHY**

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# CONNECTIONS: CURRICULUM UNITS & TOPICS



**Question:** How do I connect RIA to my curriculum?

**Answer:** Here are some suggestions to help you incorporate the RIA contest themes into your curriculum

**Tip:** Encourage students to express their science investigations through the Visual, Written and Performing Arts using an RIA contest theme (see page 4).

## HUMAN BODY SYSTEMS

Smithsonian/The National Academies, National Science Resources Center, 2000.

### Human Body Organs

After introducing the human body organs, students can conduct independent or group investigations on heart, lung and blood diseases. For example, encourage students to become “experts” on an organ and a related disease such as the lung and asthma (Lessons 1, 2).

### Digestion & Nutrition

Oral health and childhood obesity can be investigated after mouth/stomach digestion and nutrition are taught. For example, ulcer development, lack of pepsin or hydrochloric acid in the stomach, or the inability to absorb nutrients can foster classroom discussion on digestive system diseases such as celiac disease. When covering nutrition, discuss how sleep can be affected by poor nutrition or caffeine (Lessons 3, 4, 5).

### Diffusion & Active Transport

Connect this lesson to how oxygen diffuses across membranes in our lungs. Try comparing gas diffusion in the lungs with nutrient uptake in the small intestine and the importance of surface area in different body systems (Lesson 6).

### Surface Absorption

Surface absorption can be used to investigate gastro-intestinal illnesses like acid reflux, ulcers, irritable bowel syndrome, diarrhea and constipation. Try connecting nutrition and diet to urban health disparities (Lesson 7).

### Diseases & Health Careers

An RIA project can be used to direct “Lesson 9, Anchor Activity—Diseases and Health Careers.” This lesson asks students to conduct an independent project that will introduce them to diseases and/or careers in the field of health. Use the RIA contest themes, such as oral health or lung diseases like asthma, to hone students’ choices for their project (Lesson 9).

### Heart Structure & Function

Have students investigate facts on what causes atherosclerosis, congenital heart defects, arrhythmias, cardiac arrest and high blood pressure. Ask: What are these conditions? Who is affected by these conditions? Why is it important to know about these diseases? Think about introducing blood diseases including hemophilia, anemia and sickle cell anemia when teaching about blood (Lessons 15, 16, 17).

### Nutrition and Physical Fitness

Discuss healthy life styles such as fitness and nutrition. Explore the availability of fresh healthy foods, along with parks and playgrounds in various communities as this applies to human body health.

### General

The theme of urban health lends itself to a plethora of human body system activities ideas. Students can investigate how illness and disease can potentially spread rapidly in urban areas due to over-crowding, the issue of lack of access to treatment for people without health insurance, and differences in morbidity and mortality among different racial and ethnic groups. Sleeping disorders, oral health, malnutrition and homelessness affect those in urban areas due to quality of living issues and disparities.

## WEATHER & WATER

### **Solar Waves**

The topics of solar waves and refraction tie well into health issues such as melanomas and skin cancer. Students can also extend their thinking to how radiation can be harmful or, in some cases, helpful such as in cancer treatment (Lesson 4). Include a discussion on green spaces in communities and how this can impact air quality and heat islands.

### **Water Cycle**

Try introducing ideas of waterborne illnesses from pollution sources and runoff and other urban environmental health concerns. The environmental impact of water quality on communities and health – Who needs clean water? Who has access to clean water? (Lesson 7).

## DIVERSITY OF LIFE

Lawrence Hall of Science, University of California at Berkeley, 2003.

### **Bacteria & Fungi**

During “Investigation 10, Kingdoms of Life,” students are asked to explore bacteria through growing cultures in Petri dishes. An RIA extension activity idea is for students to research different kinds of bacterial infections. Follow up by asking students to create a song, essay, poster, skit, etc. that informs and educates others on the causes, transferability, preventions and cures of bacterial infections (Lesson 10).

### **Bacterial & Viral Infections**

Some examples of respiratory tract infections are sinusitis, pharyngitis, pneumonia and bronchiectasis. While teaching about the diversity of life, bring up the difference between bacteria and viruses, and which heart, lung and blood diseases can be caused by bacteria, viruses or both. Discuss endocarditis for heart and blood bacterial infections (Lessons 1, 10).

### **Microbes**

During the “Microbes We Eat” lesson, one of the goals is to find foods that have microbes in them. As an RIA extension activity, students can explore and research food-borne illnesses: what type of microbe is primarily involved, how the illness is contracted, prevented and cured? Have students trace the pathways of infection from the mouth through the various human body systems (Lesson 10).

## CHEMICAL INTERACTIONS

Lawrence Hall of Science, University of California at Berkeley, 2004.

### **Chemicals**

The first two activities in chemical interactions involve identification of white chemical substances. Have students research what each substance is and its role in medicine and health. For example, Ascorbic Acid (Vitamin C) can help body tissues grow and treat oral diseases like scurvy (Lesson 1).

Students explore how substances such as alcohol, lead paint and pollutants affect communities.

## POPULATIONS & ECOSYSTEMS

Lawrence Hall of Science, University of California at Berkeley, 2004.

### **Environmental Health**

The “Biosphere 2 Project” addresses urban issues involving invasive species, air quality and a host of other environmental challenges. An RIA extension activity involves researching the different “Eco-scenarios” such as water use/quality issues, and the role of urban areas on run-off, pollution of riparian and ocean ecosystems. Student project: investigate the role of humans in affecting our environments at large (Lesson 2).

Explore access to parks and playgrounds, toxin-free buildings and soil in various communities as this applies to environmental justice.

### **Natural Selection**

Consider discussing how some populations of humans have acquired the sickle cell trait in response to malaria, a blood disease where a parasite infects red blood cells. Have students research what malaria and sickle cell anemia are, who is susceptible to these diseases, and relevant health disparities (Lessons 9, 10).

### **Finding Energy**

Discuss food as a source of energy and determine the energy content and nutrients in various types of food.

## RIA CONTEST THEMES

The themes for this year's contest include:

- safety
- healthy eating
- physical fitness
- health disparities
- urban health issues
- anti-violence
- oral health
- public health
- heart disease
- lung disease
- blood disease
- kidney disease
- sleeping disorders

## IMPORTANT DATES

### MARCH 9, 2012

All contest submissions are due.

### MARCH 19-27, 2012

Performing Arts Entries will be videotaped by HMS at various locations.

### MAY 31, 2012

EVENT: Reflection in Action: building healthy communities™ held at Harvard Medical School

## FUNDERS

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For more information about the contest and the event, please contact:

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Find us: [reflectioninaction.org](http://reflectioninaction.org)

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RIA supports the national Let's Move! campaign

Join us: [letsmove.gov](http://letsmove.gov)

## USEFUL WEBSITES

### GENERAL

[www.emtech.net/teachers.htm](http://www.emtech.net/teachers.htm)

Provides links to various websites of teacher resources and lesson plans covering a wide array of academic topics.

### HEALTH

[www.letsmove.gov](http://www.letsmove.gov)

National Let's Move! campaign is America's move to raise a healthier generation of kids.

[www.minorityhealth.hhs.gov](http://www.minorityhealth.hhs.gov)

Office for Minority Health website provides data, statistics and health topics related to specific minority populations.

[www.nigms.nih.gov/Education](http://www.nigms.nih.gov/Education)

Offers free resources for teachers to download that are related to science and health.

[www.theteacherscorner.net/lesson-plans/health/index.htm](http://www.theteacherscorner.net/lesson-plans/health/index.htm)

Contains links to lesson plans about teaching proper nutrition to students of all ages.

[www.pbs.org/teachersource](http://www.pbs.org/teachersource)

Lesson plans and teaching ideas for all grade levels to bring health topics into the classroom.

[www.webmd.com](http://www.webmd.com)

Provides access to comprehensive medical information on health and disease including an interactive symptoms guide.

[www.ada.org/public.aspx](http://www.ada.org/public.aspx)

Offers dental resources including career descriptions, printable classroom activities and student science project ideas.

<http://www.hsph.harvard.edu>

Health related news, features and events including conferences for educators and health professionals.

### ENVIRONMENT

[www.epa.gov/students/teachers.html](http://www.epa.gov/students/teachers.html)

Includes lesson plans, resources for awards and grants, and tips on how to get students involved in community services, student internships and locating scholarships.

[www.mwra.com](http://www.mwra.com)

The Massachusetts Water Resources Authority provides classroom presentations, teacher training workshops, and activities for parents, students and teachers. For example, field testing curriculum on water quality samples.

[www.nbii.gov](http://www.nbii.gov)

Provides information and data on our nation's biological resources and the environment.

[www.tolweb.org/tree](http://www.tolweb.org/tree)

Tree of Life website depicting organisms' diversity and their evolutionary relationships through time.

### VIOLENCE PREVENTION

<http://www.great-online.org/Components/MiddleSchool.Aspx>

A skills-based middle school curriculum used by Boston Police Department Youth Programs to prevent youth crime, violence, and gang involvement while developing a positive relationship among law enforcement, families, and our young people to create safer communities.

[www.mincava.umn.edu/documents/pnvcur7-12/pnvcur7-12.pdf](http://www.mincava.umn.edu/documents/pnvcur7-12/pnvcur7-12.pdf)

Social studies high school curriculum that can be adapted for middle school grades that encourages non-violent dispute resolution and peer mediation. Introduces philosophies of twelve peacemakers of the twentieth century who serve as role models including Dr. Martin Luther King, Mother Teresa, Anwar Sadat, Mahatma Gandhi, Eleanor Roosevelt and Albert Einstein.

<http://www.mysati.com/curriculum.htm>

Sexual Assault curriculum developed to reduce the incidence of adolescent sexual assault through risk-reduction educational strategies. The curriculum includes lessons for high school and middle school aged youth. The lessons can be used in either school or non-school settings.

