

Activities from PhUn Week 2007

Activity Title: Physiology BINGO

Subject Matter: Healthy Living Questionnaire

Grade Level(s): 4th-8th

Type of Activity: Large group, an "ice breaker" at the start of a gathering

Description: Participants (students and teachers) each get a BINGO card (A and B version, with grid scrambled). Questions/statements on BINGO card can be adjusted for different age groups. The participants walk around the room and "interview" everyone in the room (including adults/teachers/other students), asking them to initial on the square that indicates they have done the activity described in the square ("I have had a broken bone," "I drank 8 glasses of water yesterday," etc.). Each person may only sign a card a single time. The first student to get BINGO (5 in a row) gets a "prize."

Developed by: Jackie Brittingham and Ashley Cudworth

Institution: Simpson College, Indianola, Iowa

Email: jackie.brittingham@simpson.edu

Activity Title: The Heart, the Machine that Doesn't get Tired

Subject Matter: Cardiovascular

Grade Level(s): Middle and High School

Type of Activity: Hands-on, personal or small group activity

Description: A word find puzzle to answers for questions on the anatomy and physiology of the heart. Includes a coloring activity for understanding the chambers of the heart and blood flow.

Comments: Artwork used with permission from The Children's Heart Institute, <http://childrensheartinstitute.org/>

Created in Spanish and translated into English (under review). PowerPoint presentation associated to explain the anatomy and physiology of the system.

Developed by: Jose O. Garcia, Nildris Cruz, Ana E. Rodriguez

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Activity Title: Dress-A-Scientist

Subject Matter: Perceptions of a Scientist

Grade Level(s): K-5th

Type of Activity: Demonstration

Description:

1. Prior to the arrival of the Physiologist, students draw a picture of a scientist.
2. On the day of the visit, the Physiologist introduces him/herself as a Scientist.
3. Physiologist ask for volunteers to share his/her drawings with the group.
4. After students are finished sharing their drawings, the Physiologists selects a student volunteer.
5. The Physiologist asks the students to share what they think a Scientist looks like as well as the tools that a Scientist needs.
6. The Physiologist provides the student volunteer with the items that are discribed by the students.

Developed by: Clintoria Williams

Institution: University of Alabama at Birmingham

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Activities from PhUn Week 2007

Activity Title: Dress-A-Scientist

Subject Matter: What do scientists do?

Grade Level(s): K-8th

Type of Activity: Small/large group, discussion, ice-breaker

Description: Kids have their own ideas about what a scientist looks like and what they do all day. A wonderful way to get them to interact and to pull out all the misconceptions they have is to do a "Dress-A Scientist". Pick one student that will act as the scientist model and have the others in the group suggest items our model needs to "make them a scientist".

Items include: Glasses or goggles, funny hair (Einstein wig), a lab coat, pens and pencils in the pocket, assorted labware, "a big brain" is often mentioned and since you can't make the brain bigger a bag of cooked oatmeal works well for extra brain matter. This is usually all in my brown bag so the kids can't see. Also, I often pick a girl first, just to see if I get the reaction, "She can't be a scientist she is a girl!"

Developed by: Margaret E. Shain

Institution: Our Lady of Perpetual Help School, New Albany, IN

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Activity Title: The Science of Life-Physiology Research in Action Comic Book

Subject Matter: What is Physiology?

Grade Level(s): 4th -12th

Type of Activity: small/large group, hands-on, discussion, ice breaker

Description: APS has a tremendous resource, at at no cost to you, that makes the discussion of what physiology is and what physiologists do fun and understandable for students in 4th-12th grade. Sending a request to the APS Education Office takes care of getting the desired number of books you will need. The title is, "The Science of Life-Physiology Research In Action."

I use this book with my 8th graders every year and this year they suggested we "act" it out rather than simply read it. We looked through the entire story before we began to find and divide up all the parts. Many of the pages have captions, so you will need some narrators as well which helps give 12-14 kids a parts. Let the kids be creative, some of my boys wanted the girl parts, they used voices they thought went with the roles, ect. Making it interactive helped to get them involved and interested in the great material.

Original source: The Science of Life-Physiology Research in Action Comic Books

Developed by: Margaret E. Shain

Institution: Our Lady of Perpetual Help School, New Albany, IN

Email: mshain@the-aps.org

Activities from PhUn Week 2007

Activity Title:	Food Labels/Nutrition
Subject Matter:	Nutrition and Food Pyramid
Grade Level(s):	Appropriate for 5, 6, 7 grade (taught to 6 th grade students)
Type of Activity:	Small Group, Hands-on, Show and Tell, Taste Test, Guess the Snack Based on Food Label Alone
Description:	Students were provided a copy of the MyPyramid. The components of the food groups were discussed. The effect of exercise on caloric intake was discussed. The students were taught how to read a nutrition label. The nutrition labels of fat-free, 1% chocolate, 2%, and whole milk were provided. The students completed a table indicating the serving size, calories, grams of fat, and calcium of each milk. The students were presented with 6 snack items (fruit, chips, candy, beverages) and the anonymous nutrition labels for each. The students filled out a table matching the food to the label. The students took a blinded taste test of fat-free, 1%, 2%, and 4% whole milk and discussed preferences. Caloric intake from skim milk versus chocolate milk over a lifetime was presented.
Original source, comments, web links:	http://www.mypyramid.gov/ http://www.wholefoodsmarket.com/products/produce/list_fruit.html http://www.nutritiondata.com/facts-C00001-01c21TN.html http://www.diet-data.com/sweets/candies/hershey/mounds_candy_bar/ http://www.thefruitpages.com/contents.shtml http://www.acaloriecounter.com/candy-chocolate.php My Health My World Activities Guide for Teachers Food and My World Baylor College Medicine, Wow Publications, Houston, TX
Modified by:	Lisa Harrison-Bernard
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Activity Title:	Shrinkie Art Cells
Subject Matter:	Animal and plant cell structure
Grade Level(s):	5 th
Type of Activity:	hands-on, interactive
Description:	I had them trace the components of either an animal or plant cell onto shrinkie plastic (looks like a transparency) from the craft store. They got to color the organelles different colors with sharpies. I then punched a hole in a corner of the cell, shrunk it for them in the oven, and made zipper pulls for them. The coloring activity helped them recognize cell parts like the nucleus and cell wall, etc. when they did end up using the microscope. They also ended up with a souvenir to take home.
Developed by:	Cathy Uyehara
Institution:	Tripler Army Medical Center, Honolulu, Hawaii
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Activities from PhUn Week 2007

Activity Title:	Anatomical Organs and Models
Subject Matter:	Anatomy and Physiology
Grade Level(s):	5 th
Type of Activity:	hands-on, interactive, models
Description:	<ul style="list-style-type: none">• Chicken organs, like chicken liver, heart and gizzards, from the butcher shop put into zippie bags (so students could feel the softness of the organs).• Anatomical models of the heart, lungs, and liver (to get a feel for the size of organs).• Plastic model of a skeleton and x-rays of broken bones.
Original source, comments, web links:	Part of the activity was more for the anatomy lesson the teacher wanted, but we talked about the physiology and functions of each organ system in small break out groups.
Developed by:	Cathy Uyehara
Institution:	Tripler Army Medical Center, Honolulu, Hawaii
Email:	catherine.yamauchi@us.army.mil

Activity Title:	Respiratory Activity
Subject Matter:	Respiration and lung capacity
Grade Level(s):	5 th
Type of Activity:	hands-on, interactive, experimental
Description:	The respiratory activity was simply for the students to get a measure of lung capacity from an inverted 5 gallon jug of water (water displacement method). The students blew into a tube that displaced the water in the jug. The volume displaced was calculated based on the markings on the jug that the students had previously calibrated themselves. The lung capacity volumes were graphed to show individual variability, and influence of size, exercise, and asthma. Heart rate and respiratory rates were taken before and after 3 minutes of running ("doing ladders") to illustrate the effects of oxygen demand on exercising muscles.
Developed by:	Cathy Uyehara
Institution:	Tripler Army Medical Center, Honolulu, Hawaii
Email:	catherine.yamauchi@us.army.mil

Activity Title:	Cardiovascular Physiology
Subject Matter:	Heart rate response
Grade Level(s):	4 th -8 th
Type of Activity:	small group, hands-on, experimental
Description:	Students measure their resting heart rate while: 1) laying on the ground; 2) sitting upright in a chair; 3) standing; 4) again one minute later.
Original source, comments, web links:	Steven S. Segal, Yale University School of Medicine Works very well particularly for the 4 th -6 th graders. http://www.phunweek.org/pages/phun06a.shtml
Used by:	David Holtzclaw
Institution:	University of Nebraska Medical Center
Email:	dholtzclaw@unmc.edu

Activities from PhUn Week 2007

Activity Title: **Muscle Contractions**

Subject Matter: Muscle Physiology

Grade Level(s): 5th-9th

Type of Activity: small group, hands-on, experimental

Description: Students squeeze a ball and release, once per second for as long as they can. Rest one minute, then students squeeze a ball and hold the squeeze as long as they can. Which was longer and why?

Original source, Steven S. Segal, Yale University School of Medicine

comments, Works very well particularly for the 4th-6th graders.

web links: <http://www.phunweek.org/pages/phun06a.shtml>

Used by: David Holtzclaw

Institution: University of Nebraska Medical Center

Email: dholtzclaw@unmc.edu

Activity Title: **ECG and Heart Sounds**

Subject Matter: Cardiovascular

Grade Level(s): 9th-12th

Type of Activity: Small group, hands-on, experimental, discussion

Description: This activity allows students to record and analyze their own electrocardiograms (ECG), and examine the relationship between the ECG and heart sounds. Give a brief introduction about the heart, its electrical activity, and the cardiac cycle. Students work in small groups through the following experiments: 1) ECG in a resting volunteer, 2) ECG recorded from several other volunteers to identify similarities and differences between people, 3) Using a stethoscope to listen to the heart and an event marker to determine the relationship between heart sounds and the ECG being recorded at the same time, and 4) Digitally recording the heart sounds with a phonocardiogram while the ECG is being recorded. Have students explain the correlation between heart sounds and the ECG in terms of the cardiac cycle.

Comments: Original source from Lab Tutor, ADInstruments. You will also need laptops, stethoscopes, alcohol swabs, and lab handouts.

Used by: Jessica Clark

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Activities from PhUn Week 2007

Activity Title:	Medical School Visit
Subject Matter:	Science Laboratory Careers
Grade Level(s):	7 th
Type of Activity:	Anatomy, Animal Behavior Lab, Microscopy, Physiology Lab
Description:	Students rotated through 4 laboratory activities. They visited the anatomy lab and viewed different human organs. They experienced a question and answer session and hands-on exploration of organs. In the animal behavior lab, they helped with running an experiment and documented results. They learned about working with animals in the lab. In the microscopy lab, they ran an experiment and learned to use the scopes and computer program that went with the experiment. The experiment had to do with marking food and watching how the cells incorporate the food. In the physiology lab, the students watched a PowerPoint presentation on seizure research, and ran an experiment that showed how tissues react to toxins to stimulate seizures and how epinephrine and norepinephrine reduce seizure activity. Also, they learned how the tissue was prepared for the experiment.
Participants:	B. Grove, Van Doze, Sarah Bosie, Karen Cisek, L. O'Shea, and many student laboratory assistants.
Coordinated by:	B. Grove, Van Doze, Sarah Bosie, Karen Cisek, L. O'Shea
Institution:	University of North Dakota School of Medicine
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Activity Title:	Blood Vessels
Subject Matter:	Circulatory System
Grade Level(s):	general
Type of Activity:	hands-on, interactive activity
Description:	Equipment: cups, water, straws, coffee stirrers <ul style="list-style-type: none">• Ask visitors if they know how blood moves around their bodies. Explain that when your heart pumps it pushes blood through tubes called blood vessels.• Normally your blood vessels have enough space for the blood to move through. But, sometimes your blood vessels can become narrower – maybe because you ate lots of unhealthy food or never did any physical activity (for little kids you can clarify physical activity as running around, hopping, playing, and stuff like that).• Say that you have an experiment to do to test the difference between regular blood vessels, and blood vessels that are narrow.• Have visitors try drinking some water through a straw. Then have them try drinking through a coffee stirrer. What was the difference? Why do they think there is a difference? What might this mean for how your blood travels through your blood vessels?
Comments:	Part of the PhUn Day event at the Boston Children's Museum
Coordinated by:	Andrea Gwosdow, Alissa Daniels, Emily Kuross
Institution:	Gwosdow Associates Science Consultants
Email:	andrea@gwosdow.com

Activities from PhUn Week 2007

Activity Title: Test your Reaction Time

Subject Matter: Nervous System

Grade Level(s): general

Type of Activity: hands-on, interactive activity

Description: *Equipment:* pieces of paper marked with a ruler

- Ask visitors if they know what reaction time is. Your reaction time is basically how quick you (your nerves and muscles) can respond to something that happens – sometimes before you even think about it.
- In many sports, athletes train their reaction time to be quicker so they do a better job hitting balls, catching, and so on.
- Help visitors test their reaction time by holding the piece of paper above where they have their hand. Let it go and see how far it falls before they catch it.
- Try comparing how quick their reaction time is if they know you are going to drop the paper (count down) versus if they don't know.
- How else might they improve their reaction time?

Comments: Part of the PhUn Day event at the Boston Children's Museum

Coordinated by: Andrea Gwosdow, Alissa Daniels, Emily Kuross

Institution: Gwosdow Associates Science Consultants

Email: andrea@gwosdow.com

Activity Title: Pulse Checking

Subject Matter: Heart rate/blood flow

Grade Level(s): general

Type of Activity: hands-on, interactive activity

Description: *Equipment:* pulse charts, watch/clock that shows seconds

- Explain what a pulse is: basically a way of feeling your heartbeat
- Teach children how to take their pulse and figure out how fast their heart is beating (per 10 seconds). Explain that your heart will beat faster or slower – and your pulse will change – depending on what kinds of activities you are doing.
- Give them the pulse checking sheet, help them record the pulse rate they just determined, and tell them that they can check their pulse and write it down in different places in the museum to see how it changes. When is it higher? When is it lower?

Comments: Part of the PhUn Day event at the Boston Children's Museum

Coordinated by: Andrea Gwosdow, Alissa Daniels, Emily Kuross

Institution: Gwosdow Associates Science Consultants

Email: andrea@gwosdow.com

Activities from PhUn Week 2007

Activity Title: Sweat

Subject Matter: Perspiration, homeostasis

Grade Level(s): general

Type of Activity: hands-on, interactive activity

Description: *Equipment:* jar of rubbing alcohol, cotton swabs, thermometers, jar of water

- Ask visitors if they ever sweat. When? What do they think sweat is for?
- Sweat helps your body cool down because when it evaporates (turns from liquid into gas) it takes away heat from your body.
- Show visitors the rubbing alcohol and explain that alcohol evaporates even faster than water, so they will be able to feel the temperature change on their skin more easily – show on the thermometer that the alcohol is the same temperature as the air/a jar of water.
- Swab a little alcohol on the back of the visitor's hand. Ask them how it felt as it dried up.

Comments: Part of the PhUn Day event at the Boston Children's Museum

Coordinated by: Andrea Gwosdow, Alissa Daniels, Emily Kuross

Institution: Gwosdow Associates Science Consultants

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Activity Title: Anatomy/Physiology Clever Catch Ball Bounce

Subject Matter: Test Your Anatomy/Physiology Knowledge

Grade Level(s): 4th-12th

Type of Activity: Medium group (less than 50), "ice breaker"

Description: Passing the Anatomy Ball is a great activity that gets students moving in the room (we just try to keep it up in the air until someone calls STOP, the person who catches it must answer the question that is under their left thumb--the questions are a bit advanced for 4th graders, but they enjoy it anyway).

Original source: Wards Natural Science Clever Catch Ball:
http://wardsci.com/product.asp_Q_pn_E_JG0017625

Developed by: Jackie Brittingham and Ashley Cudworth

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Activity Title: What does it "feel" like to have an asthma attack?

Subject Matter: Restrictive Pulmonary Disease Discussion

Grade Level(s): 4th-12th

Type of Activity: Large group, hands-on demonstration

Description: Simulate Asthma: students jump around for a minute or two, get heart rate/breathing rate up and then breathe through a drinking straw for 20 seconds (exclude asthma patients, and monitor students during breathing activity so that they will not pass out). They rate how they feel on a 5 point scale (easy----- hard to breathe) and we discuss the features of asthma in this context.

Developed by: Jackie Brittingham and Ashley Cudworth

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