Credits

Authors
Kristen Clapper Bergsman, MEd
Laughing Crow Curriculum LLC
Kathryn True
Laughing Crow Curriculum LLC

Editor
Kristen Clapper Bergsman, MEd
Laughing Crow Curriculum, LLC

Copy Editor
Polly Freeman, MA

Prototype Assistance
Outreach Education Staff
Pacific Science Center

Storyline Advisors
Felicia Maffia
Pacific Science Center
Lisa Berndt
Ellipse Studio

Design
Clayton DeFrate
Pacific Science Center

Project Director
Sarah Huschle
Pacific Science Center

Evaluation Manager
Angie Ong
Pacific Science Center

Prototype Assistance
Outreach Education Staff
Pacific Science Center

Storyline Advisors
Felicia Maffia
Pacific Science Center
Lisa Berndt
Ellipse Studio

Design
Clayton DeFrate
Pacific Science Center

Project Director
Sarah Huschle
Pacific Science Center

Evaluation Manager
Angie Ong
Pacific Science Center

Special Thanks to Science and Education Staff at Pacific Science Center for their many reviews and excellent feedback.
# Table of Contents

5     Exhibit Information  
5     Note to Educators  
7     Welcome to Wellbody Academy  
9     A Brief History of Wellbody Academy of Health & Wellness  
11    About Professor Arden Wellbody  
12    Washington State Learning Standards Emphasized in Wellbody Academy  
13    Wellbody Academy’s Guided Tour By Professor Wellbody  
13    Wellbody Hall Highlights  
13    Playdium Highlights  
14    Cafédium Highlights  
14    Slumbertorium Highlights  
14    Germnasium Highlights  
15    The Studio Highlights  
15    The Loft Highlights  
16    The Wellbody Way  
17    Grades 4–6 Classroom Activities  
18    Curriculum Connections for Wellbody Academy Pre- and Post-Visit Activities  
20    Pre-Visit Activities  
20    Overview of Pre-Visit Activities  
21    General Exhibit Activity  
21    Health Behavior Poll: Pre-Visit  
25    Playdium Activities  
25    Fitness Science Information: From the Notebook of Victoria Dash  
28    Activity: Every Body Dance Now  
33    Fitness Pledge  
35    Resources  
39    Cafédium Activities  
39    Nutrition Science Information: From the Notebook of Rosemary Baker  
44    Activity: Pack a Snack  
47    Nutrition Pledge  
50    Resources
<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
<th>Activities/Information</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td><strong>Slumbertorium Activities</strong></td>
<td>Sleep Science Information: From the Notebook of Hugo Knapp</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity: Sleep Sleuths</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td></td>
<td>Sleep Pledge</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td><strong>Germnasium Activities</strong></td>
<td>Hygiene Science Information: From the Notebook of Dustin McLean</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity: Don’t Bug Me</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td></td>
<td>Hygiene Pledge</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td><strong>Post-Visit Activities</strong></td>
<td>Overview of Post-Visit Activities</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td><strong>General Exhibit Activity</strong></td>
<td>Health Behavior Poll: Part 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity Ideas</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
<td>Shining Stars</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
<td>Get Better Now Machines</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
<td>Dear Professor Wellbody</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
<td>Life-Changing Careers</td>
<td></td>
</tr>
<tr>
<td>89</td>
<td></td>
<td>Health and Fitness Classroom Based Assessment (CBA)</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td></td>
<td>Take-Home Letter to Parents/Guardians</td>
<td></td>
</tr>
</tbody>
</table>
Note to Educators

Professor Wellbody’s Academy of Health & Wellness is built around the story of innovative physician Eleanor Wellbody, her nephew Professor Arden Wellbody and their quest to bring the science and fun of health and wellness to the masses. In keeping with the academy theme, this Educator’s Handbook is presented in the form of a school handbook. We hope the Academy's joyous, inquisitive nature inspires you and your students to find the fun in developing and maintaining healthy habits.

The story of Eleanor and Arden are shared at the beginning of the Handbook and help set the stage around Wellbody Academy as a place where learning about health and wellness abound. Also through these pages you will meet some other characters from the Academy. These characters help tell the story of the different focuses within the Academy walls, from nutrition to sleep to hygiene to physical activity. These four mentors have notebook pages in the Handbook that give you and your students a glimpse into their personality and area of expertise and upon visiting Wellbody Academy you and your students will find desks that will continue to tell the stories of these Academy mentors. Below is quick introduction to each of them. We hope you enjoy their pages and your exploration of Wellbody Academy.

Victoria Dash is a female in her early 30s. Victoria is a vigorous, confident and competent camp counselor type (the one who can always get the camp fire started.) She’s welcoming and encouraging towards people of all physical abilities and takes the greatest pleasure in the success of others. Victoria is a physical omnivore who is interested in all sorts of non-traditional ways to be physically active and is interested in activities that require full utilization of the body. She’s an organized list maker and scheduler.

Rosemary Baker is a female in her 50s. Rosemary is a vibrant, earthy woman who is passionate about food and loves to garden. She’s rather disorganized and messy and quite experimental when it comes to food and projects (reflected in her love of kitchen gadgets.) Rosemary is very involved in the local food community from Seattle Tilth to back yard chicken farming. She’s fascinated by all different types of cuisine and encourages others to broaden their palettes in order to discover their own joy of good food.

Hugo Knapp is a male in his mid-20s. Hugo is pretty laid back and for someone so young he’s very centered and comfortable, not easily excited. His style tastes of quiet mid-century modern aesthetic matches his personality. He orchestrates his environment and there’s a sense of deliberateness about what he chooses to keep at his desk.

Dustin McLean is a male in his mid-40s. While an accomplished scientist who is fascinated by the ways we try to hold back the forces of bacteria, Dustin is the jokerest of the mentors with a broad sense of humor. Maybe it’s the love of disgusting/scary topics, but kids are totally drawn to Dustin who makes hand washing, bad breath and oral hygiene fun and interesting.
Dear Educator,

I would like to extend a warm welcome to you from Pacific Science Center and our newest exhibit, Professor Wellbody’s Academy of Health & Wellness, or Wellbody Academy. I am excited and heartened that you are taking the time to consider and prepare for your class’s visit. As our nation faces the rise of preventable conditions such as type 2 diabetes and obesity, Pacific Science Center has chosen an inspiring and interactive environment, Wellbody Academy, to help children and families better understand how to make healthier choices in everyday life.

Through this Educator’s Handbook you will find information to help prepare for your visit to Wellbody Academy as well as activities that support classroom learning, help set the stage for your field trip and encourage reflection on the experience after the trip. There is information in the Handbook that also illustrates how the exhibit and the activities in the Handbook align with and support Washington State Essential Learning Standards in Health and Fitness as well as Science.

The Handbook helps illustrate the story of Wellbody Academy and introduces you and your students to the mentors who play a role in telling the story of everyday decisions relating to nutrition, exercise, sleep and hygiene that affect overall wellness. Your students will then have the opportunity to experience Wellbody Academy first hand and participate in the exhibit’s playful and hands-on activities that will encourage them to discover new perspectives relating to their wellness as a key part of their everyday life.

I hope that you enjoy this journey to Wellbody Academy and learn as much as your students do and that our halls welcome you back from time to time to assist you in leading a life that is well-balanced and healthy.

In good health!

R. Bryce Seidl
President and CEO
Pacific Science Center
A Brief History of Wellbody Academy of Health & Wellness

by Professor Arden Wellbody

Welcome to Professor Wellbody’s Academy of Health & Wellness also known as Wellbody Academy where we believe there is something each of us can do each day to improve our general health and wellbeing. Some time ago, my dear Aunt Eleanor had a vision. She believed that each person could take charge of his or her health by following some simple and common sense rules about exercise, eating, good hygiene and sleep. She also imagined many fun ways to share these healthy messages with others.

Aunt Eleanor devoted her life to matters of health. She came from a long line of doctors and spent her early years providing health care to those who couldn’t afford it. She saw the potential of an academy as an opportunity to focus on promoting wellness rather than treating disease and this fueled her interest.

At some point in the 1930s, she decided to make this dream a reality. An expert outdoorswoman who firmly believed that she did her best thinking in the forest, Aunt Eleanor trekked the wilderness of the Washington backcountry until she found a site for Wellbody Academy. She built herself a tree house and began tinkering with ideas and tools. Over time, her vision of a play- and apparatus-based approach to wellness education began to take shape before her eyes. My Aunt Eleanor built a joyful, interactive place that served as a nursery for innovative ideas—Professor Wellbody’s Academy of Health & Wellness.

Soon word about Wellbody Academy got out and visitors from all walks of life began to visit my aunt in her wilderness hideaway. Some stayed for a few days, others for years—all were welcome as long as they were committed to helping people to choose healthier lifestyles. Over time, the school grew and evolved with the input of these kindred spirits who shared my aunt’s passion for helping people have fun while they improved their health and well-being.

As a child, I spent summers at Wellbody Academy and always enjoyed dreaming up new, playful health-related contraptions. Before she passed on (dying peacefully in her sleep of natural causes at age 101!), Aunt Eleanor asked me to officially join her in her efforts. It was not a difficult decision for me to choose Wellbody Academy as my life’s work.
After moving to Wellbody Academy, I started a visiting scientists’ program to enrich our students’ learning with cutting-edge ideas in health science research. Missing Aunt Eleanor’s daily presence and sage advice, I also began a mentor program, inviting the best and brightest of our Wellbody Academy students to stay on and do their research here, directly involving our students in scientific explorations related to health and wellness. Our current mentors are Victoria Dash (fitness), Rosemary Baker (nutrition), Hugo Knapp (sleep) and Dustin McLean (hygiene).

The founding premise of Wellbody Academy is that each one of us can always take at least one concrete step, no matter how small to improve our health and well-being each day. As scientific understanding has advanced, our recommendations for healthy living have become more refined. Wellbody Academy only promotes well-tested, evidence-based recommendations. We also believe in supporting the expansion of health knowledge. That’s why Wellbody Academy showcases the cutting-edge science that will lead to the health breakthroughs of tomorrow.

We hope you will join us by making more informed choices to support your own health and wellness. As Aunt Eleanor knew, we are all wonderfully different—each with our own unique gifts and challenges. No matter where we start from, there is always something each of us can do every day to enhance our individual well-being.

Welcome and, above all, have fun!

Arden Wellbody

Exercise well
Eat well
Wash well
Sleep well
— and live well!
About Professor Arden Wellbody

Professor Wellbody’s work history is rich and varied. In the 1980s he trekked the Himalayas to drink in (and study) the health benefits of pomegranate juice. An “eat local” pioneer in the 1990s, the Professor walked across Washington harvesting and eating only locally grown and raised foods. Along the way he scouted out every playground he could find—not only because he loves to play but also because he was on a mission to discover new fitness + fun contraptions—some of which you may get to test out yourself when you visit the Academy! In 2004, Professor Wellbody volunteered to have his sleep monitored for a month in a laboratory to help answer important questions about sleep cycles. As these activities demonstrate, he lives by the words on Wellbody Academy seal: Imagine—Plan—Grow.

Though he has lived for weeks at a time in many countries around the world, the Professor is always excited to return home to Wellbody Academy, where he reports he is healthiest and happiest. As he puts it, “Home is where the health is!”
WASHINGTON STATE LEARNING STANDARDS EMPHASIZED IN WELLBODY ACADEMY

We’ve taken special care to make sure Wellbody Academy’s teachings reinforce other learning experiences for our visitors. The Washington State Essential Academic Learning Requirements (EALRs) in Health and Fitness* establish the concepts and skills necessary for safe and healthy living and in turn, for successful learning. Wellbody Academy addresses these four health and fitness EALRs to varying degrees:

- **EALR 1** captures movement, physical fitness, and nutrition.
- **EALR 2** recognizes dimensions of health, stages of growth and development, reduces health risks and promotes safe living.
- **EALR 3** analyzes and evaluates the impact of real-life influences on health.
- **EALR 4** analyzes personal information to develop an individualized fitness plan.

The EALR components **most directly** addressed by Wellbody Academy are provided in the table below:

| Health and Fitness EALR 1: The student acquires the knowledge and skills necessary to maintain an active life in movement, physical fitness, and nutrition. | 1.3: Understands the concepts of health-related fitness, and interprets information from feedback, evaluation, and self-assessment in order to improve performance.  
1.5: Understands relationship of nutrition and food nutrients to body composition and physical performance. |
| --- | --- |
| Health and Fitness EALR 2: The student acquires the knowledge and skills necessary to maintain a healthy life: Recognizes dimensions of health, recognizes stages of growth and development, reduces health risks and lives safely. | 2.1: Understands foundations of health.  
2.3: Understands the concepts of prevention and control of disease. |
| Health and Fitness EALR 3: The student analyzes and evaluates the impact of real-life influences on health. | 3.1: Understands how family, culture, and environmental factors affect personal health.  
3.2: Evaluates health and fitness information.  
3.3: Evaluates the impact of social skills on health. |

One of my favorite things to do is give tours of Wellbody Academy. Drawing on tour notes I’ve made over the years, I’ve prepared this written tour of the school’s “must see” highlights to help you plan your visit.

Our main objective at Wellbody Academy is to empower students to begin taking control of their own health and wellness. We have succeeded if every child leaves Wellbody Academy with the understanding that he or she can always do something—take some concrete step—to improve his or her health and well-being. We’ve done even better if they know what first steps to take and best of all if they begin to turn these first steps into healthy habits!

Wellbody Academy has four main areas of focus: fitness, nutrition, sleep and hygiene, each with a defined location where kids can play and learn about the topic. Following are brief overviews of some of Wellbody Academy’s finest activities followed by thought-provoking questions/challenges to help you further engage your students on these topics.

**Wellbody Hall Highlights**

This student union building introduces visitors to the skills they need to implement healthy changes in their daily lives.

- **With a Little Help …**

  Make new friends as you work with other Wellbody Academy visitors to guide a ball through a complex maze. *Were you more successful solo or with the help of your friends?*

**Playdium Highlights**

In the Playdium, reconnect with the joy of physical play and learn how “moving it” keeps you well… and happy!

- **Loft-a-Palooza**

  Is it a bird? Is it a plane? No! It’s Loft-a-Palooza! This high-flying fabulous fitness machine lets you bounce and jump your way to victory as you launch balls sky high. Use “butt bouncers,” a jump pump or a hand pump to power up pressure tanks and launch balls toward overhead targets. *I dare you not to laugh!*

- **Whirligigerator**

  Get moving to put the whirl in these overhead “gigerators!” The more you move, the more active they become. *What kind of movement did you enjoy the most and what kind of activity could you do at home that would be similar?*

- **Mentor Victoria Dash’s Work Area**

  Take a look at the desk of this fitness guru. *What can you learn about Victoria Dash by examining her work area?*
Cafédium Highlights

Come to the Cafédium to play games that boost your knowledge of food and nutrition and whip up your own recipe for healthy eating.

• Food Analyzer

Your challenge, should you choose to accept it, is to create a day’s worth of balanced meals! Select foods from the conveyor belt and use the Food Analyzer to learn their nutritional content and decide if you want to add it to your “virtual meal plan”. Did you learn anything surprising about any of the foods you scanned?

• Burger Planet

Play fast-food drive-through in this role-playing game that helps you determine the calorie “price tags” of different fast-food choices. It’s not easy to create a healthy meal with only fast-food options, but you can learn how to lower your overall calorie “costs.” What fast-food item would you order to keep your calorie cost low? What item would you avoid to keep the cost from getting too high?

• Mentor Rosemary Baker’s Work Area

Take a look at the desk of this nutrition expert. What can you learn about Rosemary Baker by examining her work area?

Slumbertonium Highlights

Wake up to this humorous introduction to the importance of sleep, the often underappreciated key to overall health and wellness.

• Sleep Machine

Sleep is no yawner! This enormous mechanical and digital contraption whirs and pings as wheels, dials, videos and blinking lights show us that there is a whole lot going on inside our bodies while we sleep. View Bed Head Theater and decide who has the best “bed head” in your family and why.

• Sleepability System Maximizer

Dig into the physical and environmental factors that impact the ability to get a good night’s sleep. How do a TV, window shade, dog, skateboard and pizza box relate to good ZZZs? Find out using this activity. What would you change about your own bedtime environment to improve your sleep?

• Mentor Hugo Knapp’s Work Area

Take a look at the desk of this sleep scientist. What can you learn about Hugo Knapp by examining his work area?

Germnasium Highlights

Gross out and giggle as you find out what getting clean, like washing your hands and brushing your teeth, has to do with staying healthy!
• Sneeze Wall
You might want to wear your raincoat during this very dramatic reminder of why it’s important to cover your mouth and nose when you sneeze. **Show me how you’ll cover your next sneeze!**

• Tic-Tac-Ewww
Points for (spying) bad behavior! In this Tic-Tac-Toe/Bingo hybrid, your challenge is to beat your opponent in spotting the bad hygiene behaviors enacted on the video. The first to identify three bad behaviors in a row wins! **What kind of bad hygiene behavior grossed you out the most?**

• Odor Decoder
Your nose knows. Squeeze the bottles to sniff different types of bad breath and discover their causes. **Quick! Name three things that could cause bad breath!**

• Mentor Dustin McLean’s Work Area
Take a look at the desk of this hygiene researcher. **What can you learn about Dustin McLean by examining his work area?**

**The Studio Highlights**
Check out cutting-edge science in The Studio, an exhibit and program space that features the latest in current health sciences research. This space changes regularly, so be sure to come back often.

• Rotating Exhibit
The Studio exhibit will feature a new topic in health science research every six months, showcasing the latest from laboratories and research institutions in the Pacific Northwest. Planned topics include: Genetics (Dec. 2012–May 2013), Neuroscience (June 2013–Nov. 2013), Translating Research into Medicine (Dec. 2013–May 2014), Environment and Health (June 2014–Nov. 2014), and Cancer (Dec. 2014–May 2015), with future topics to be determined. **What was the featured research topic during your visit?**

**The Loft Highlights**
What does it mean to be healthy for an entire lifetime? Swap stories of healing, aging and a lifelong commitment to wellness.

• Face Facts!
How will you look when you’re 70? See what kind of impact health and wellness choices could have on your physical appearance as you age. Take a photo and watch as your image changes based on weight, sun exposure and smoking. **What influenced your computer image most and why?**

• Who Do You Turn To…
Create a word collage that illustrates the important roles different friends and family members play in your life using this fun computer program. **What characteristics made you want to add the particular people featured in your collage?**
Time to spare?
Send the kids on a scavenger hunt through Wellbody Academy.

See if you can find a…

- Hourglass
- Skateboard
- Deck of cards
- A stuffed sheep
- A big clock
- French fries
- Dental floss
- Fork
- Baseball
- Bike
- Golf ball

**THE WELLBODY WAY**

Drink that extra glass of water,
eat that fifth and sixth green bean.

Go to sleep ‘cause your body needs it.
Take a shower—keep real clean.

Put down the head set,
est those thumbs.

Grab some fresh air.
Brush ‘round your gums.

The rules are simple,
it’s easy to do.

The payoff’s huge.
The power’s with you.
Grades 4–6 Classroom Activities

Wellbody Academy has created these science activities to help your students make the most of their visit to this exhibit.

The pre-visit activities help spark students’ curiosity about the four topic areas they will encounter during their visit to the Wellbody Academy: fitness, nutrition, sleep and hygiene. Students are challenged to make four health and wellness pledges before they visit Wellbody Academy. In addition, relevant scientific background information has been provided allowing you and your students to peek into the pages of the notebooks of each of Wellbody Academy’s esteemed mentors. You will also find a variety of suggested resource for teachers, including a glossary, websites and books to share with students as well as career connections.

The post-visit activities invite students to check in and reflect on their own health behavior changes sparked both by the pre-visit activities and their visit to Wellbody Academy. It works well if these activities are presented shortly after visiting Wellbody Academy. In addition, a Take-Home Letter for Parents/Guardians is provided as a way to follow up with students’ families to extend the learning experience to the home environment.

In addition, information is provided about the Washington State Health and Fitness Classroom Based Assessment (CBA) “Mrs. Trimble’s Muffins.” This CBA is an elementary-level assessment focused on nutrition content. Alignment information is provided to show the CBA connections to Wellbody Academy exhibit as well as to the pre-visit nutrition activity “Pack a Snack” and nutrition mentor Rosemary Baker’s notebook pages that are featured in this Educator’s Handbook.
The pre- and post-visit activities provided in this Educator’s Handbook are aligned to the Grades 4–6 Washington State Essential Academic Learning Standards* for Health and Fitness as well as for Science. The table below provides alignment information between the activities and these learning standards. In addition, the Wellbody Academy exhibit as well as the “Pack a Snack” pre-visit activity are aligned to the Washington State Health and Fitness Classroom Based Assessment (CBA) “Mrs. Trimble’s Muffins.”

Pre-visit activities are shaded light blue while post-visit activities are shaded dark blue.

### Grades 4 – 6 Washington State Essential Academic Learning Standards

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EALR 1 - 1.3:</strong></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Understands the concepts of health-related fitness, and interprets information from feedback, evaluation, and self-assessment in order to improve performance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EALR 1 - 1.5:</strong></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Understands relationship of nutrition and food nutrients to body composition and physical performance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EALR 2 - 2.1:</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Understands foundations of health.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EALR 2 - 2.3:</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understands the concepts of prevention and control of disease.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EALR 3 - 3.1:</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understands how family, culture, and environmental factors affect personal health.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EALR 4 - 4.1:</th>
<th>✓</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzes personal health and fitness information.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Science Learning Standards

<table>
<thead>
<tr>
<th>EALR 1 Systems:</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify parts of living and non-living systems (part-whole relationships). See how parts of objects, plants, and animals are connected and work together (role of each part in a system).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EALR 2 Inquiry:</th>
<th>✓</th>
<th>✓</th>
<th>✓</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer questions by explaining observations of the natural world (making observations). Carry out investigations by using instruments, observing, recording, and drawing evidence-based conclusions (conducting investigations).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**


Overview of Pre-Visit Activities

5 General Exhibit Activity
   Health Behavior Poll: Pre-Visit

25 Playdium Activities
   Fitness Science Information: From the notebook of Victoria Dash
   Activity: Every Body Dance Now
   Fitness Pledge
   Resources

39 Cafédium Activities
   Nutrition Science Information: From the notebook of Rosemary Baker
   Activity: Pack a Snack
   Nutrition Pledge
   Resources

39 Slumbertorium Activities
   Sleep Science Information: From the notebook of Hugo Knapp
   Activity: Sleep Sleuths
   Sleep Pledge
   Resources

44 Germnasium Activities
   Hygiene Science Information: From the notebook of Dustin McLean
   Activity: Don’t Bug Me
   Hygiene Pledge
   Resources
Health Behavior Poll: Pre-Visit

Students can join a statewide science activity by completing this simple pre-visit questionnaire! By providing answers about his or her health behaviors, each student will be able to compare his or her personal results with those for his or her class both before and after visiting Wellbody Academy as well as with data from other students across Washington state who have visited Wellbody Academy.

Main Concepts:
Students will provide baseline data so they can assess any changes to their health behaviors after attending Wellbody Academy.

Materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Behavior Poll</td>
<td>1 per student</td>
</tr>
<tr>
<td>Pencils</td>
<td>1 per student</td>
</tr>
</tbody>
</table>

Time: 15 minutes

Do This!

1. Explain to the students that as part of their preparation for their visit to Wellbody Academy, they will participate in a statewide survey about health behavior and behavior change. They will answer a set of questions before and after their visit to see if the field trip experience influences them to make and maintain any changes to their health habits.

2. Pass out one copy of the Health Behavior Poll to each student.

3. Ask students to write their name at the top along with the letter A (to signify pre-visit poll.)

4. Depending on students’ reading level, either ask them to answer the questions on their own or go through the questions one by one as a class, helping students mark their answers.

5. Collect and save students’ papers to use in comparison with the post-visit poll.

6. Later on, after compiling the students’ results, you can show the students how they answered as a class so they can compare their personal answers with those of the class overall (e.g., half of the class had breakfast this morning).
7. Let students know their upcoming visit to Wellbody Academy will help them understand the importance of healthy behaviors and to think about these topics when they are on their field trip.

8. Remind students that they will have the opportunity to take the same poll a week or so after visiting Wellbody Academy to find out if there have been any changes in their health habits. They will be able to note and discuss any individual or class changes.

9. Keep the consolidated pre-visit survey answers for comparison with the post-visit survey responses. In determining the impact of individual and collective behavior change we would like to invite you to submit the pre- and post- survey results online. Entering results is straightforward and should take no more than 15 minutes to complete, if you have the surveys consolidated (e.g., number of students that answered most days for question 1 on the pre-visit and then on the post-visit). It will be particularly valuable if most of the students completed both the pre- and post-visit surveys. As an incentive and to thank you for taking the time to enter your class’s data we will send you a thank you in the form of four exhibit passes to Pacific Science Center that you can use with your family or friends.
HEALTH BEHAVIOR POLL

1. What grade are you in?

2. How often do you eat breakfast?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

3. How often do you eat fresh fruit?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

4. How often do you eat fresh vegetables?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

5. Do you brush your teeth in the morning?
   a. Always
   b. Sometimes
   c. Rarely

6. Do you floss your teeth once a day?
   a. Always
   b. Sometimes
   c. Rarely

7. In the morning, how do you usually feel?
   a. Rested
   b. A little sleepy
   c. Very tired

8. How often do you wash your hands before meals?
   a. Always
   b. Sometimes
   c. Rarely

9. How often do you wash your hands after using the bathroom?
   a. Always
   b. Sometimes
   c. Rarely

10. How many times during the week are you physically active for 30 minutes or longer (such as playing a sport, taking a walk, riding your bike)?
    a. Every day
    b. Most days (4 to 6 times a week)
    c. Some days (1 to 3 times a week)
    d. Rarely

11. How important do you feel it is to:
    A. Eat healthy foods
       a. Very Important
       b. Kind of important
       c. Not important
    B. Exercise regularly
       a. Very Important
       b. Kind of important
       c. Not important
    C. Get a good night’s sleep
       a. Very Important
       b. Kind of important
       c. Not important
**Playdium Activities**

**Fitness Science Information:**
From the Notebook of Victoria Dash

---

**Why do people crave sugar?**

**Hint:** Think bananas! Though our tongues can taste four basic flavors—salty, sour, bitter and sweet—we often crave sweet foods because we are primates. Our monkey ancestors were tree-dwelling fruit eaters. Monkeys and apes learned to prefer sweet, ripe fruit because it holds more sugar than unripe fruit, so it provides more energy to the body. Ripe fruit also packs more water, which is a bonus for those who choose the safety of the trees over the risks of a visit to the water hole. Because of this history, when we eat sugar, our brains produce chemicals that make us feel “good.” No wonder sweets are so hard to resist!

**What is a calorie and how many are burned by doing different physical activities?**

Calories are a unit of measurement, like a centimeter, a mile or a pound. Calories provide a measure of how much energy a food or beverage can make available to your body after you eat or drink it. For example, a medium-sized apple has about 95 calories. A half-cup of peanut butter has around 590 calories. A glass of 2% milk has 122 calories. If you are curious about how many calories are in your food, look at the nutrition facts label on packages, but make sure to read it carefully and consider the serving size, too. If you eat two servings, you eat double the calories!

---

**Nutrition Facts**

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>1 package (39g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>140</td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>60</td>
</tr>
</tbody>
</table>

**Amount/Serving % Daily Value**

- **Total Fat** 10g (115%)
- **Saturated Fat** 1.5g (8%)
- **Trans Fat** 0g
- **Cholesterol** 0mg (0%)
- **Sodium** 330mg (14%)
- **Total Carbohydrate** 23g (8%)
- **Dietary Fiber** 1g (5%)
- **Sugars** 3g
- **Protein** 4g

- **Vitamin A** 0%
- **Vitamin C** 0%
- **Calcium** 2%
- **Iron** 6%

Your body uses calories all the time—even when you are sleeping. Calories provide the energy needed to keep your body running just like gas is needed to keep a car running. When you are physically active, you use (or burn) more calories. Here are some examples of different physical activities and how many calories an 80-pound 11-year-old student would use by doing each activity for 30 minutes:

- Sleeping: 16 calories
- Reading: 24 calories
- Eating: 27 calories
- Swimming: 109 calories
- Jumping rope: 181 calories
- Playing with a dog: 51 calories
- Vacuuming: 62 calories
- Skateboarding: 91 calories
- Attending class: 32 calories
- Shooting hoops (basketball): 81 calories
- Doing homework: 33 calories
- Listening to music: 18 calories
Why does the body need physical activity?

Being active builds strong bones and muscles, helps your body fight illness, improves concentration, relieves stress, helps you sleep better and increases overall energy levels. Best of all, physical activity can be a lot of fun! I just can’t do boring when it comes to working out! I also like to get active with my friends and family and there’s no denying that it’s great for your body, mind and mood.

What happens to the body when you are physically active?

When you are physically active, do you notice that your breathing increases? When you huff and puff, you are working your heart muscle. Lifting a weight won’t exercise your heart muscle; you have to do activities that make you breathe hard, like soccer, hip-hop dancing or rollerblading. When you’re working hard doing these activities, your lungs also get a workout. The body needs to breathe more when you are active because your muscles need more oxygen to keep working. The lungs pump extra oxygen into the blood and then your heart pumps that oxygen-rich blood throughout your body. As you do more physical activity, your lungs and heart get stronger and better at their jobs: supplying your body with the oxygen it needs to sink that basket or do that cartwheel.

Fun Facts:

• You have more than 630 muscles in your body.
• Your heart beats about 100,000 times a day — that’s 40 million beats a year!
• Your body has 3 million sweat glands.
• By eating 100 more calories a day than necessary, the average American could gain about 10 extra pounds a year.
• Physically active children are more likely than inactive children to have healthy hearts as adults.

Craziest Sports I Must Try:

1. **Curling in Canada**: Shuffleboard played with brooms on ice!
2. **Bog Snorkeling in Wales**: Flippers required... and no recognizable swim strokes allowed.
3. **Cheese Rolling in Gloucester, UK**: Can I roll down the hill faster than a round of cheese?
4. **Octopush in New Zealand**: Underwater hockey, of course.
5. **Bossaball in Spain**: Combines volleyball, soccer, gymnastics, and capoeira (a Brazilian martial art that uses music and dance), played on a specially designed inflatable court with a trampoline on each side of a net.
6. **Quidditch at Hogwarts**: I can dream, can’t I?

To Do:

- [ ] Buy new rock-climbing rope for trip to Metaline Falls
- [x] Make granola for trip
- [ ] Sign up for yoga class
- [ ] Call Alex about organizing fun run
- [x] Tune-up bike
Why should I warm up before I play soccer?

Warming up sends messages to your muscles and tendons: Wake up—we’re going to get active! As you stretch and move, you increase blood flow to the muscles, which helps them do their jobs better. Warm-up stretches and moves also raise your body temperature, sending more oxygen to important muscles and joints. It can also help prevent injuries and help you score more goals!

What kind of physical activity does the body need to stay healthy and why?

Your body needs three kinds of activities to keep fit. Aerobic, strength and stretching activities are all key to keeping your heart and other organs healthy and your muscles flexible and strong. Aerobic (1) means “with oxygen” and refers to any activity that requires extra air—like when you are jogging and breathing faster than normal. Strength (2) exercises, such as push-ups or wall sits, require short bursts of hard work; they help build muscles. You can’t do these activities for long because your muscles can’t get enough oxygen to keep up such hard work for a long time. That’s why these types of strengthening activities are also called anaerobic (“without oxygen”). Stretching (3) exercises like touching your toes or side bends help increase your flexibility, which helps lengthen your muscles and protects you from getting hurt.

How can being active improve my mood?

It sure is exciting to make that winning goal or learn a new swim stroke but being active feels good for another reason. When you work your body hard, your brain releases a group of chemicals called endorphins that can make you feel happy. So, what are we waiting for? Let’s get moving!
Activity: Every Body Dance Now

In this high-energy, laugh-inducing activity, students will learn how to bust some new and old dance moves as they expand their understanding of what it means to get fit.

Main Concepts: Students learn that physical activity helps the body burn calories, that different activities burn varying amounts of calories, how to do simple dance moves and that dancing is one way to have fun while getting fit. They also collect and chart personal data such as heart rate and observe any changes that occur after being physically active.

Materials:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer to view dance videos (a large screen or projector is beneficial)</td>
<td>1</td>
</tr>
<tr>
<td>Space to dance (gym or activity area)</td>
<td>1</td>
</tr>
<tr>
<td>CD/MP3 of 1960s fast dance music</td>
<td>1</td>
</tr>
<tr>
<td>Two resources available through Seattle Public Library:</td>
<td></td>
</tr>
<tr>
<td>All the Best Checker, Chubby (Music CD - 2008)</td>
<td></td>
</tr>
<tr>
<td>CD/MP3 player with speakers</td>
<td>1</td>
</tr>
<tr>
<td>Timer</td>
<td>1</td>
</tr>
<tr>
<td>Clock with a second hand visible to all (for recording pulse and breath rate)</td>
<td>1</td>
</tr>
<tr>
<td>Pen/pencil</td>
<td>1 per student</td>
</tr>
<tr>
<td>Photocopies of Every Body Dance Now Worksheet (provided at end of lesson)</td>
<td>1 per student</td>
</tr>
<tr>
<td>Photocopies of Fitness Science Information: From the Notebook of Victoria Dash (optional student reading)</td>
<td>1 per student</td>
</tr>
</tbody>
</table>

Time: 60 minutes

Do This!

1. Explain to students that dancing is one way they can get physically fit. In this activity they will try out some dances that were popular way back in the 1960s. Wellbody Academy strongly believes that getting fit should be fun!
2. Using the Playdium *Fitness Science Information: From the Notebook of Victoria Dash* (See question: “What is a calorie and how many are burned by doing different physical activities?”), teach the students what a calorie is and why it’s important to have a healthy balance between the energy that a body takes in (calories consumed) and the energy that a body uses up (calories burned). Dancing is one fun way to burn calories.

[Note: The *Fitness Science Information: From the Notebook of Victoria Dash* may be photocopied for your students and provided as background reading material.]

3. List the following types of dance on the board and discuss their differences with your students. Ask if any of your students know how to do any of the dances or if they’ve seen them performed. Invite them to share their personal experiences with the class.

- **The Twist, the Swim and the Hitchhiker** (and other popular 1960s dances performed vigorously): See definitions below.
- **Ballet:** A classical dance that started in the Italian Renaissance (15th and 16th centuries), noted for its graceful precise movements, complex gestures, steps and poses.
- **Hip-hop:** Dances done to hip-hop music defined by moves including breaking, locking and popping.
- **Square dancing:** American folk dancing in which four couples form squares and perform set moves together.
- **Swing dancing:** A group of dances done with a partner that developed at the same time as American swing and jazz music in the 1920s–1950s.
- **Tap dancing:** In this dance style, the dancer wears shoes with metal “taps” on the soles, at heel and toe. The taps hit the floor and make noise in time to the music.
- **Disco:** Popular in the 1970s and performed to “disco music,” this type of dancing is known for hip and pelvic moves.
- **Jazz:** Commonly used in Broadway shows and movies, jazz combines moves originally drawn from African-American and Caribbean traditional dances.

4. Pass out copies of the *Every Body Dance Now Worksheet*, one per student (found at the end of this lesson). Ask students to rank the eight dances on their worksheets from #1, for the dance they think burns the most calories, to #8 for the dance they think burns the least calories.

5. Show students the YouTube videos listed below, which illustrate how to do the Twist, the Swim and the Hitchhiker. If you can’t view these websites in your classroom due to a content filter, view them on your own time and then demonstrate the dances yourself. Explain that these are the dances they will be doing for this activity:

- **The Twist**
  http://www.ehow.com/video_7553367_twist-dance-steps.html (2:01 min)
  http://www.youtube.com/watch?v=xbK0C9AYMd8&feature=related (2:46 min)
  (Chubby Checker doing original Twist on American Bandstand)

- **The Twist, Swim, Hitchhiker** and other 1960s dance moves
  http://www.youtube.com/watch?v=D5clMvSCBLE& (5:01 min)

- **The Hitchhiker** with a hip-hop spin
  http://www.youtube.com/watch?v=0kkYsP2Q-AI (4:59 min)
6. You may also choose to share with students the following descriptions for the three dances:

- **The Twist**: Dancer stands in relaxed position. Hips rotate or twist in time with the music. Feet will automatically twist too. Dancer should put weight on balls of feet and twist feet along with hips. With elbows bent, arms twist in time with music. This dance can be done at various heights—twist high, medium and low!

- **The Swim**: Dancer stands in relaxed position. When music begins, hips bounce and swing to music, while arms move like a swimmer doing the front crawl (8–16 counts), then the back stroke (8–16 counts) and then the breast stroke (8–16 counts). Occasionally, dancer holds nose with one hand and bends knees deeply to “dip” underwater; while underwater, the dancer holds other hand up with palm open and waves.

- **The Hitchhiker**: Dancer begins in relaxed position. Hips shake 3 times to the right, as thumb sticks out to the right and bounces to right with beat of hips and music. (Hold count 4). Now do the move to the left, with hips shaking to left 3 times, while left thumb points and bops to left like someone trying to hitch a ride. Dancers can move around and add spins to this dance.

7. Next, ask students to gather some personal data using the *Every Body Dance Now Physical Observations Data Chart* on their worksheets. (Ask students to share with the class if they know the definition of “observation:” The act of watching something closely to gather information.) Students will measure and record their resting heart rate and breathing rate (see procedure below) and answer several questions. Then, students will gather the same data after dancing and observe any differences before and after dancing.

[**Note:** To take heartbeats per minute (heart rate), have students find their pulse at their neck or wrist, count the number of heartbeats in 10 seconds, and multiply by 6. Have them write this number on the chart. (A normal resting heart rate for children is 70–100 beats per minute.)]

[**Note:** To take breathing rate, have students count the number of breaths they take in 30 seconds and multiply by 2. Have them write this number on their chart. (Normal resting breathing rate for 6- to 12-year-olds is 18–30 breaths per minute.)]

8. Now it’s time to have fun and burn some calories! Move to your dance area and explain to the students that they will be dancing the 1960s dances for 10 minutes total. **Have students bring with them their worksheet and a pencil.** The goal is to feel the benefits of vigorous physical activity and to burn calories, so encourage students to put a lot of energy into their dancing and to keep moving throughout the time period to have the most useful and interesting results.

[**Note:** Please encourage students to rest if they need to but to keep dancing if they can. If they feel faint or completely out of breath, they should stop and catch their breath and get a drink of water before dancing again.]

9. Before starting the timer, practice each dance together and answer questions about how to do them. Remind students that it’s okay if they can’t do the dances perfectly; the goal is for them to have fun moving! The sillier the better.

---

**STAY HYDRATED!**

Your body requires more water when you’re physically active. **Encourage students to drink water before, during and after they exercise.**
10. Start your music and set the timer for 10 minutes. Now, do the Twist! After three minutes or so, go straight into dancing the Swim. Remind students to be as active as possible as they do the Swim. Next, after 3 minutes or so, do the Hitchhiker. Urge students to keep moving as they dance the Hitchhiker for the rest of the time period. If you like, you can cycle through the different dances more than once, doing each for shorter periods of time.

11. As soon as the time is up, have students stop dancing and immediately take their pulse and then breathing rate. Have them enter the new numbers on their chart. Also, have students make the other observations to fill in the chart completely.

12. Allow everyone time to get a drink of water and return to your classroom, if needed.

13. Ask students to refer to their worksheet where they listed the different dance types in the order in which they thought the most calories were burned. Write on the board the average number of calories burned for an 80-pound 11-year-old doing the different dances for 10 and 30 minutes. (We included 30 minutes because this is the minimum recommended length of time that someone be active to receive the benefits of aerobic activity. Students might want to set a goal of being physically active at least 30 minutes a day):

<table>
<thead>
<tr>
<th>Dance Type</th>
<th>Calories Burned in 10 Minutes</th>
<th>Calories Burned in 30 Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip-hop dancing</td>
<td>41</td>
<td>124</td>
</tr>
<tr>
<td>Ballet dancing</td>
<td>38</td>
<td>115</td>
</tr>
<tr>
<td>Jazz dancing</td>
<td>38</td>
<td>115</td>
</tr>
<tr>
<td>Tap dancing</td>
<td>38</td>
<td>115</td>
</tr>
<tr>
<td>Disco dancing</td>
<td>35</td>
<td>105</td>
</tr>
<tr>
<td>Square dancing</td>
<td>35</td>
<td>105</td>
</tr>
<tr>
<td>Swing dancing</td>
<td>32</td>
<td>95</td>
</tr>
</tbody>
</table>

14. Now ask students to guess how many calories they burned doing the 1960s dances for 10 minutes. Answer: 38 calories. (Doing these dances for 30 minutes, they would burn 115 calories.)

15. Allow time for students to fill in this information on their worksheets.

16. Ask the class if these numbers are more or less than they expected. Did the calorie amounts burned for any of the dances surprise them? Which ones and why? How accurate were their original guesses about which dances burned the most calories?

17. Ask the students to refer to their Every Body Dance Now Physical Observations Data Chart on their worksheets. What differences do they notice in the numbers and answers before and after dancing? Did the dancing make them feel like they “got a workout?” Why or why not? What did they learn about dancing as a calorie-burning activity?

18. Compare these calorie counts to those on the calorie chart provided in the Playdium Fitness Science Information: From the Notebook of Victoria Dash, (See question: “What is a calorie and how many are burned by doing different physical activities?”) How does dancing measure up against the other activities listed in the chart?
19. **Take-home idea:** Ask students to teach one of the dances they learned to their family and report back to the class about how it went.

20. **Health/creative arts extension:** Invite students to work in groups and make up their own dance moves that they think will use more calories than the 1960s dances they did in this activity. Provide students with a few song options available on the web to use for their dances (invite them to help you brainstorm song ideas and make sure the lyrics are appropriate before the assignment). Have students name their dance and demonstrate it to the class. Ask the class to choose one of these dances to test. After doing the new dance for 10 minutes, have the class make the observations on their *Every Body Dance Now Physical Observations Data Chart* on their worksheets. Are their heart and breathing rates lower, the same or higher than when they danced the 1960s dances for 10 minutes? Why?

21. **Health/technology extension:** While at the computer lab, invite students to make up their own dances using the Kidnetic website “Move+Mixer” dance creation tool at http://www.kidnetic.com/Kore/Move.aspx. Challenge students to think up an inspiring name for their dance. Ask students to switch computer stations and learn a classmate’s dance by following the robot moves and directions on the computer.

22. **Fitness pledge:** Wellbody Academy is committed to helping us change behavior to improve our health and wellness. To help kids focus on tangible changes they can make in their own lives, we’ve provided pledge certificates after each activity for you to use with your students. You can choose to make a pledge as a class, or allow each student to come up with his or her own pledge. After Every Body Dance Now, ask students to pledge to do some kind of fun physical activity every day—or at least four times a week. Invite the class to brainstorm fun, calorie-burning activities before making the pledge.
Wellbody Academy of Health & Wellness

Fitness

Pledge

This certificate hereby proclaims

To be a fitness fan!

Every day to keep my body healthy!

Signed,

[Name]

[Write in fitness activity]

[Signature]
### Every Body Dance Now Worksheet

**Prediction:** Rank these dances from the one that burns the **most** calories (1) to the one that burns the **least** calories (8).

<table>
<thead>
<tr>
<th>Rank (#1 – 8)</th>
<th>Dance</th>
<th>Calories burned (10 min)</th>
<th>Calories burned (30 min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Twist, the Swim and the Hitchhiker (and other 1960s fast dances)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ballet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hip-hop</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Square dancing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swing dancing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tap dancing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disco</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jazz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Every Body Dance Now Physical Observations Data Chart

<table>
<thead>
<tr>
<th>Observation</th>
<th>Before dancing</th>
<th>After dancing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heartbeats per minute (pulse)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breaths per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel tired? (Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel energized? (Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you out of breath? (Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is your heart pounding? (Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you sweaty? (Y/N)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Glossary:**

**Aerobic activity:** Aerobic means “with oxygen.” These activities need oxygen to keep the muscles in motion for a longer period of time, like when you’re jogging, swimming, mountain-biking or skiing.

**Anaerobic activity (also called strength exercise):** Anaerobic means “without oxygen.” This doesn’t mean you stop breathing when you do this type of exercise! It means that these activities are so hard for muscles to do that they don’t receive enough oxygen to keep going for a long period of time. Examples include sprinting and lifting weights.

**Calorie:** A unit of measurement for the amount of energy in food and drinks.

**Endorphins:** Chemicals the brain releases when you are physically active that can improve your mood and make you feel happy.

**Flexibility:** Being able to bend and stretch your body in a full range of motion—moving your arms and legs without tightness or pain.

**Heart Rate:** The number of times your heart beats per minute.

**Muscle:** The tissues attached to bones and tendons that help you move, lift and stretch. (The heart is a muscle that pumps blood through your body.)

**Observation:** The act of watching something closely to gather information.

**Physical Activity:** Any body movement that uses your muscles and burns more energy (calories) than when you are resting.

**Strength:** Body or muscle power.

**Fit-as-a-Fiddle Careers:**

This list can be used as a resource for a class activity focused on fitness. Ask students to research one of the careers listed below and make a poster of someone doing that job. Have them share what they learned with the class. Or invite someone who works in one of these careers to come talk to your class.

**Athletic trainers** work with injured athletes and other people with sports injuries. They can provide emergency treatment for injuries, bandage or brace body parts and teach athletes how to prevent injury.

**Chiropractors** are healthcare providers who treat people experiencing problems with their muscles, bones, ligaments and tendons. They use techniques such as spinal manipulation, which involves applying force to parts of the spine to relieve pain.

**Coaches** lead sports teams in competitions and teach athletes the skills needed for their sport.
Dance instructors teach individuals or groups various forms of dance.

Orthopedic surgeons are doctors who focus on bones, muscles, ligaments, tendons, and joints. They perform joint-replacement surgery and repair broken bones.

Physical therapists help people with injuries or disabilities improve their range of movement and manage pain.

Rehabilitation nurses help people with chronic illnesses or physical disabilities adapt to their situations.

Suggested Websites for Teachers:

- KidsHealth
  http://kidshealth.org/kid/
- The President's Council on Fitness, Sports, and Nutrition
  http://www.fitness.gov/
- Bam! Body and Mind: Centers for Disease Control and Prevention
  http://www.bam.gov/
- Wheelchair & Ambulatory Sports, USA
  http://www.wsusa.org/
- Disabled Sports USA
  http://dsusa.org/
- Kidnetic (A site of the International Food Information Council Foundation)
  http://www.kidnetic.com/

Book Resources for Students (4–6):

- Be Fit, Be Strong, Be You
  Rebecca Kajander and Timothy Culbert (Free Spirit Publishing, Inc., 2010)
- Keeping Fit: Body Systems (Do it Yourself Science)
  Carol Ballard (Heinemann Library, 2008)
- Exercise (It's Your Health)
  Beverly Goodger (Smart Apple Media, 2004)
- Exercise (Health & Fitness)
  Judy Sadgrove (Raintree Steck-Vaughn Publishers, 2000)
- 101 Questions about Your Muscles to Stretch Your Mind and Flex Your Brain
  Faith Hickman Brynie (Twenty-First Century Books, 2008)
Bibliography:


KidsHealth
http://kidshealth.org


What are nutrients and how does my body use them?

I’m so glad you asked! When I was out in the garden this morning weeding the carrots I was thinking about how food is such an important part of our lives, yet most of us know so little about how it provides materials that our bodies need to function. Nutrients are the important things contained in your food that help you stay healthy. Most of them are so small that you can’t see them without a microscope. Your body needs five different kinds of nutrients: carbohydrates, fats, proteins, vitamins and minerals. Your body also needs water which may contain minerals.

Your body has more water inside it than any other element—in fact water makes up half or more of your weight (up to 70 percent)! Your body needs water for everything it does—from digesting food to carrying nutrients around the body to making sure you’re not too hot or cold. Carbohydrates and fats are nutrients that provide the body with energy. Proteins are your personal construction workers—building and repairing tissues wherever they are needed. Vitamins and minerals help the body use other nutrients.

To do its job, your body needs 13 major vitamins and about 20 minerals. The best way to get your vitamins and minerals is to eat foods that are chock full of them! Here’s a chart of just a few of the important vitamins and minerals, what foods provide them and how they help your body:

<table>
<thead>
<tr>
<th>Vitamin or mineral</th>
<th>How it helps the body</th>
<th>How to get it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin D</td>
<td>Strengthens bones</td>
<td>Fish, eggs, exposure to sunshine</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>Protects cells and tissues; supports red blood cells</td>
<td>Whole grains, leafy green vegetables, vegetable oils, nuts and seeds</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>Important for healthy bones, teeth, gums and blood vessels; helps the body heal</td>
<td>Oranges, sweet red peppers, kale, broccoli, cauliflower, strawberries and papaya</td>
</tr>
<tr>
<td>Iron</td>
<td>Helps cells carry oxygen all over the body</td>
<td>Eggs, spinach, peas, beans, nuts, dried fruit, seaweed and red meat</td>
</tr>
<tr>
<td>Calcium</td>
<td>Builds strong bones and teeth</td>
<td>Dairy products, dark leafy green vegetables</td>
</tr>
<tr>
<td>Sodium (Salt)</td>
<td>Balances water in body tissues and blood</td>
<td>Sea salt, table salt (Caution: it’s easy to get too much salt from processed and canned foods)</td>
</tr>
</tbody>
</table>
How can eating keep me from getting sick?
Well, it’s not just eating, but what you eat, dear. All the nutrients that make up the food we eat help our body systems work and one of their jobs is building and maintaining a healthy immune system to fight sickness. For example, Vitamin C and the mineral zinc help fight infections and Vitamin E helps destroy germs that could make us sick.

How do the nutrients get to the parts of the body that need them?
As food enters the body, the digestive system breaks it down so the nutrients can enter the bloodstream. Your body knows how to put each of the nutrients to work!

How can you find out what’s in your food?
Great question! All packaged food has a nutrition facts label that lists the serving size, calories per serving and number of calories from fat, amount of saturated fat, cholesterol, sodium and daily values of nutrients (based on a 2,000 day calorie diet for adults), as well as the ingredients. The ingredients that weigh the most (and make up most of the food) are listed first.

What is a balanced diet?
That’s kind of a funny phrase isn’t it? Makes me think of balancing plates of food on my head! Here’s another way to think of it: scientists at the United States Department of Agriculture (USDA) created MyPlate (http://www.choosemyplate.gov/print-materials-ordering/graphic-resources.html) to show healthy eating guidelines—it’s a picture of a plate with different sections representing the five food groups: fruits, vegetables, grains, protein and dairy. Oils are not considered a food group but they contain essential nutrients, so it’s best to eat a small amount of healthy oils.
To eat a balanced diet, fill half your plate with fruits and vegetables and make at least half your grains whole grains (which contain the entire seed of the plant, not just part of it as in refined flours). It’s better to drink fat-free or low-fat (1%) milk and to choose water over sugary drinks. Because many Americans eat too much salt, compare sodium (a mineral found in salt) levels in foods like soup, bread and frozen meals, then pick foods that have less salt. USDA My Plate also recommends to limit portion size because large portions contain too many calories—so supersizing is out!

Are calories bad for me?
No! You could not survive without consuming calories. They give you energy to do everything from breathing to boogie-boarding. But if you take in too many calories and don’t burn enough calories than your body has more calories available to it than it is using and you can become overweight. If you eat more calories than you need, your body changes the leftover calories to fat and too much fat can be bad for you. The important thing is to find the right personal energy intake for your weight, gender, age and activity level.

How many calories do I need?
Because kids come in all sizes and everyone burns calories at different rates, there is no magic number of calories that you should eat. Most school-age kids should eat between 1,600 and 2,200 calories a day depending on their activity level, age and gender. If you are more active, you need more calories.

One way to think of the calories you need each day is as a “calorie budget.” Just like it’s helpful to have a budget for how much money you have to spend, it helps to think about how many calories you need to consume. Based on whether you are a boy or girl, your age and your activity level, you can calculate your personal calorie budget.

Is fat good for your brain?
Without fat, you could not read this sentence because about 2/3 of your brain is composed of fats. The membranes of neurons and the brain cells responsible for communication in your brain are made up of fatty acids. Your brain depends on fat not only to read but to do all its other work—from making sure you breathe to learning how to spell “cerebrum!”

So then, why are people so concerned about eating fat? Well, there are good fats and bad fats. Unsaturated fats (polyunsaturated and monounsaturated fats) are in plant-based foods like corn, avocados, nuts and olives, but they’re also found in fish. Eating this kind of fat can help your blood vessels stay clear so the blood can flow easily. Saturated fats, like butter, are solid and mainly come from animals. Too much saturated fat can clog your blood vessels, making it hard for the blood to flow through them easily. Trans fats (also called partially hydrogenated oils) are made when vegetable oils are turned into solid fats like margarine. Most scientists agree that trans fats are bad for your blood flow and they can even undermine the smart work of the good fats. So stick with unsaturated fats whenever you can. In a balanced diet, school-age kids should aim to keep the (good) fat they eat to around 30 percent of their daily caloric intake.
Recipe for Krispy Kale Chips

- Preheat oven to 425° F.
- Wash, rinse and cut stems off one bunch of Tuscan/Dino kale.
- Chop leaves into two-inch pieces.
- Toss to coat lightly with organic olive oil and season as you like—with coarse salt, fresh ground pepper and/or a pinch of cayenne.
- Place the leaves in a single layer on a baking sheet and put them in a hot oven for 8–12 minutes.
- Watch chips closely! They are ready when they just start to dry/curl/color but should not become over-brown or brittle.

Fun Facts:

- One mini pretzel will give your body enough fuel to walk about two blocks.
- If you add up the time it takes to chew and swallow every snack and meal, you spend 15 days a year eating!
- If you put it all together and melted it down, what could you make with all the iron in your body? About two nails! Now for that hammer . . .
- Humans have about 10,000 taste buds. What will you taste next?
- Your body uses thousands of different kinds of proteins to grow and maintain itself—just one reason it’s so important to eat a variety of different foods.
How much salt is too much?

Salt is made up of the minerals sodium (40%) and chloride (60%). Our bodies need sodium to do many different jobs including balancing fluids but too much sodium can cause high blood pressure, stroke and kidney disease in adults. Eating habits formed in childhood usually continue into adulthood. So, if you avoid high-sodium foods and don’t add extra table salt to food when you’re young, you’re less likely to overdo it as an adult. Children ages 7 to 11 should eat no more than 5–6 grams of salt per day (1 teaspoon of salt has 2.3 grams of sodium). To avoid getting too much sodium, read nutrition facts labels and be aware of “salt bad guys” like fast foods and some prepared and canned foods, including:

- Tomato sauce
- Frozen meals
- Soups
- Pickles and sauerkraut
- Cured meats (bologna, salami, hot dogs, ham, bacon, sausage)
- Processed cheeses
- Condiments (ketchup, mayonnaise, salad dressing)
- Salty snacks

Sugar’s Many Aliases

More than 50 different names for sugar might appear on a nutrition facts label! If you’re curious about what’s in the food you’re eating—look it up! Here are a few common names for different forms of sugar:

- Barley malt
- Caramel
- Corn syrup
- Dextrose
- Fructose
- Fruit juice concentrate
- Glucose
- High-fructose corn syrup
- Lactose
- Maltose
- Molasses
- Sucrose
- Syrup
- Evaporated cane juice
**Activity: Pack a Snack**

In this tasty and eye-opening investigation, students compare the nutritional facts of several chip brands and learn whether their usual “snack stack” is on target with the recommended serving size—and then they get to munch some chips!

**Main Concepts:** Students practice making predictions, learn how to read nutrition facts labels, compare nutrition data in different brands of chips, discuss health implications and assess their usual snack size.

**Materials:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various regular size bags of chips (baked, regular, barbecue, popped). These vary from 3 oz. to 13.5 oz. (Must be a brand that lists number of chips in the serving size on the nutrition facts label).</td>
<td>1 bag per group</td>
</tr>
<tr>
<td>Tape a piece of paper over the nutrition facts label on each bag.</td>
<td></td>
</tr>
<tr>
<td>[Note: If you have nut allergy concerns in your classroom, please choose chips accordingly, especially keeping an eye out for chips cooked in nut oils.]</td>
<td></td>
</tr>
<tr>
<td>Brown paper bag (lunch size)</td>
<td>1 per student</td>
</tr>
<tr>
<td>Paper towels</td>
<td>1 roll</td>
</tr>
<tr>
<td>Pen/pencil</td>
<td>1 per student</td>
</tr>
<tr>
<td>Photocopies of Pack a Snack Worksheet (provided at the end of this lesson)</td>
<td>1 per student</td>
</tr>
<tr>
<td>Transparency of Sample Nutrition Facts Label (provided at the end of this lesson) or show using a document camera</td>
<td>1</td>
</tr>
<tr>
<td>Photocopies of Nutrition Science Information: From the Notebook of Rosemary Baker (optional student reading)</td>
<td>1 per student (optional)</td>
</tr>
</tbody>
</table>

**Time:** 45 minutes

**Do this!**

1. Have students wash their hands. Then, divide students into groups of 4–5.
2. Explain to the class that they are going to do some nutrition research comparing popular chip brands and pack their own chip snack. Introduce the idea of “everything in moderation” when choosing which foods to eat—and that it’s okay to eat treats or “junk food” once in a while, as long as we eat enough healthy things too.
3. Hand out a bag of chips to each group. Hand out a brown paper bag and paper towel to each student.
4. Ask one person in each group to open the bag of chips. Then, have each student take the number of chips that he or she would normally eat for a snack and put them on a pile on the paper towel in front of him or her.
5. Next, ask students to write their names on their bags and then count the chips as they put them into the brown paper bag. Ask them not to eat any … yet!

6. On the Pack a Snack Worksheet, have students record the number of chips they placed in their snack bag.

7. Next, ask students to write down their prediction (in the space provided on their worksheet) about whether their typical chip snack size is less than, equal to or more than a suggested serving size of chips (without peeking at the nutrition facts label on the bag of chips!).

8. Using the Cafédium Nutrition Science Information: From the Notebook of Rosemary Baker, teach students how to read the nutrition facts label on their chip bag and have a discussion about sodium and “good” and “bad” fats. [Note: The Nutrition Science Information: From the Notebook of Rosemary Baker may be photocopied for your students and provided as background reading material.]

9. Teach students how to read nutrition facts labels using the Sample Nutrition Facts Label provided at the end of this lesson. Explain the meaning of abbreviations such as g, mg and %. Show your students that the percent daily values are based on an adult's 2,000-calorie-a-day diet (school-age children needs vary depending on age and gender. See USDA My Plate website for the recomended calorie intake for your student, http://www.choosemyplate.gov/).

10. Next, ask students to remove the paper covering the nutrition facts label on their group’s chip bag. Tell students to look at the label and record the corresponding information in the chart on their worksheet. Have them begin by filling in only the first column on the left, starting with writing the name of their chip brand/kind.

11. Using the Cafédium Nutrition Science Information: From the Notebook of Rosemary Baker, discuss the different kinds of fat, the impact of eating too much sodium and how different activities burn varying amounts of calories. (For this step, refer to these science information questions, “Is fat good for your brain?” and “How much salt is too much?”). Ask the students to discuss in their group what kind of fat their chips have and in what amounts. Do their chips have “good” or “bad” fat or both? How much sodium is in their chips? What does this tell them about how many they should eat?

12. Next, have one person from each group read aloud the data from their group’s bag of chips. Have the other students in the class write in the information on their own charts. After all of the class data has been recorded, ask the students to compare and contrast the data in their small groups. [Optional: Create a class data chart on the board or use a transparency or document camera, to allow a volunteer from each group to fill in their group’s data on the class data chart.]

13. In a class discussion, ask students to share what they think are the healthiest and least healthy chip options. Ask them to explain their reasoning. Which kinds of chips had the largest and smallest suggested serving sizes? Why?

14. Go around the room, asking each group to share one thing they learned about their brand of chips. Will they look at nutrition facts labels in a new way now? How?

15. Next, have students work individually to compare the suggested serving size for their brand of chips to their personal snack portion. Ask each student to record the number of chips in their “snack stack” in the space provided on the worksheet. How does their snack stack up? Is their snack size less than, equal to or more than a suggested serving size of chips? How does this compare to their prediction? Are they surprised by the suggested serving size? Why or why not? Ask for a show of hands of those who took less than, equal to and then more than the serving size amount for their snack.
16. Ask students to open their paper bags and count out one serving size of chips onto the paper towel and then close their bags. If they took more than one serving size in the first part of the activity, have them leave the extra chips in the paper bag and take out only the amount that adds up to one serving size. Reinforce the idea that chips are a treat and, because they generally contain a lot of fat and sodium, should not be eaten every day as part of a balanced diet.

17. Snack time! Invite students to eat their snack if they would like to. While they eat, ask them if anything they learned might influence a change in their snack habits. What and why? Reinforce the idea of “everything in moderation” when it comes to eating treats like chips.

18. Math extension: Ask students to chart the nutrition facts for their chip’s serving size, calories, fat and sodium content on a bar or line graph, using a different color for each item (assign the colors to the whole class to make it easier to compare like items, i.e., serving size = red). Compare and analyze the charts together as a class.

19. Health extension: Using the Playdium Fitness Science Information: From the Notebook of Victoria Dash, on calories burned for different activities, ask students to consider what activity they would have to do for how long to burn off the calories in one serving size of the different kinds of chips used in the Pack a Snack activity.

20. Take-home health and fitness idea: Read the nutrients section of the Cafédium Nutrition Science Information: From the Notebook of Rosemary Baker to your class. Ask students to bring to school one serving size of a snack that is healthier than chips and to be prepared to explain to the class in nutrition terms why it’s a healthier choice. (For example, it’s healthier than chips because it has less fat, more fiber and vitamin A or less sodium.) To choose their snack they can read the nutrition facts labels or look up fresh food nutritional content online. Ask students to show the class their healthy snack, explain why it’s a healthier choice than chips, describe some of its key nutrients and discuss how its nutrients contribute to a healthy body. Then have a snack time when each student can eat his healthy snack. Make a list of all of the healthy snacks and ask the kids to come up with a fun title for the list. Send home the list of healthy snack ideas for them to share with their families.

21. Nutrition pledge: Wellbody Academy is committed to helping us change behavior to improve our health and wellness. To help kids focus on tangible changes they can each make in their own lives, we’ve provided pledge certificates after each activity for you to use with your students. You can choose to make a pledge as a class, or allow each student to come up with his or her own. After the Pack a Snack activity, ask students to pledge to read nutrition fact labels and stick to the suggested serving size.
Pledge

This certificate hereby proclaims

I, [Name], to be a Nutrition Nut! I pledge to read nutrition labels and eat only one serving size of [Write in food item] to support my healthy body every day!

Signed,

[Professor Arden Wellbody]
Sample Nutrition Facts Label

Use this sample to teach students how to read nutrition facts labels, focusing on the areas highlighted in the Nutrition Facts Label Data Chart on the lesson worksheet. Students will use a similar label to find the information they need to fill in their chart and can use “label awareness” to become smarter consumers.

**Nutrition Facts**

Serving Size 1 oz (28g/about 12 chips)
Servings Per Container about 6

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Calories from Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Fat</strong></td>
<td>6g</td>
<td>10%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>0.5g</td>
<td>3%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
<td></td>
</tr>
<tr>
<td>Polyunsaturated Fat</td>
<td>0.5g</td>
<td></td>
</tr>
<tr>
<td>Monounsaturated Fat</td>
<td>5g</td>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0mg</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>80mg</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>70mg</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>18g</td>
<td>6%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>3g</td>
<td>11%</td>
</tr>
<tr>
<td>Sugars</td>
<td>2g</td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>2g</td>
<td></td>
</tr>
</tbody>
</table>

Vitamin A 20%
Vitamin C 4%
Calcium 2%
Iron 2%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

<table>
<thead>
<tr>
<th>Calories:</th>
<th>2,000</th>
<th>2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat</td>
<td>Less than 65g</td>
<td>80g</td>
</tr>
<tr>
<td>Sat. Fat</td>
<td>Less than 20g</td>
<td>25g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 300mg</td>
<td>300mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>Less than 2,400mg</td>
<td>2,400mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>300g</td>
<td>375g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>25g</td>
<td>30g</td>
</tr>
</tbody>
</table>
### Pack a Snack Worksheet

1. **Number of chips** in your chosen “snack stack”: _____________________

2. **Prediction**: Do you think your typical chip snack size is **less than**, **equal to** or **more than** a suggested serving size of chips? _____________________

### Nutrition Facts Label Data Chart

<table>
<thead>
<tr>
<th>Nutrition Data</th>
<th>Chip brand/kind (i.e., Ruffles Original©)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your chip brand/kind (for example, Ruffles Original©):</td>
<td>Chip brand/kind:</td>
</tr>
<tr>
<td>Serving size (number of chips)</td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td></td>
</tr>
<tr>
<td>Calories from fat</td>
<td></td>
</tr>
<tr>
<td>Total fat</td>
<td></td>
</tr>
<tr>
<td>Saturated fat</td>
<td></td>
</tr>
<tr>
<td>Trans fat</td>
<td></td>
</tr>
<tr>
<td>Polyunsaturated fat</td>
<td></td>
</tr>
<tr>
<td>Monounsaturated fat</td>
<td></td>
</tr>
</tbody>
</table>

3. Is your “snack stack” less than, equal to or more than a suggested serving size of chips? _____________________
Glossary:

**Antioxidant**: A substance that keeps cells from breaking down.

**Calorie**: A unit of measurement for the amount of energy in different food and drinks.

**Carbohydrates**: Chemicals that are the body’s most important source of energy; mainly derived from plants.

**Fats**: Combined chemicals called fatty acids that are integral components of the human body that help create body structures, move messages around the brain and help the body store nutrients and energy.

**Food**: Plant or animal parts eaten to provide energy and support life systems in the body.

**Ingredient**: An item that is used to make a particular food. For example, salt and potatoes are ingredients for potato chips.

**Minerals**: Inorganic nutrients from water or soil that help the body use other nutrients.

**Nutrition**: The science of studying food and how it works in your body.

**Nutrient**: Substances in food that your body uses to make energy, grow and be healthy.

**Nutrition facts label**: The label on most food products that lists the nutrients, ingredients, calories and suggested serving size for each product.

**Proteins**: Complex structures your body uses to build and repair itself.

**Serving size**: The amount of a particular food that makes up one serving as listed on a nutrition facts label.

**Vitamins**: Organic nutrients that help the body use other nutrients.

**Tasty Careers**:

This list can be used as a resource for a class activity focused on careers in nutrition. Ask students to research one of the careers and make a poster of someone doing that job. Have them share what they learned with the class. Or, invite someone who works in one of these careers to come talk to your class.

- **Agricultural and food scientists** do research that helps farmers improve their crop yields; they also work on food safety issues.
- **Chefs** are responsible for preparing food in restaurants. They supervise kitchen staff, plan menus and prepare food.
- **Dietetic technicians** work with registered dieticians to evaluate and educate people about their diets.
Dieticians and nutritionists advise people on the foods they should eat to stay healthy or to manage diseases such as diabetes.

Farmers grow fruits and vegetables and/or raise animals for food.

Public health administrators work in organizations that focus on keeping a whole community healthy by sharing information about disease prevention and health.

Suggested Websites for Teachers:

- KidsHealth
  http://kidshealth.org/kid/

- MyPlate (this new USDA food guide replaces the previous food pyramid)
  http://www.choosemyplate.gov/

- Local Harvest (find food grown close to you)
  http://www.localharvest.org/

- Spoons Across America (children’s culinary education focused on healthy eating habits)
  http://spoonsacrossamerica.org/

- The Edible Schoolyard Project (lesson plans covering “edible education”)
  http://edibleschoolyard.org/

- Fuel Up to Play 60 (making schools healthier places through healthy eating and exercise)
  http://www.fueluptoplay60.com/

- Smart-Mouth (interactive site with games, recipes, and calorie counters)
  http://www.cspinet.org/smartmouth/index1.html

Books Resources for Students (4–6):

- Food Rules!
  Bill Haduch (Dutton Children’s Books, 2001)

- Who Wants Pizza? The Kids’ Guide to the History, Science, and Culture of Food
  Jan Thornhill (Maple Tree Press, 2010)

- Food for Feeling Healthy (Making Healthy Food Choices)
  Carol Ballard (Heinemann Library, 2006)

- Cookies or Carrots? You are What You Eat
  Helen Thompson (Mason Crest Publishers, 2011)

- 101 Questions about Food and Digestion That Have Been Eating at You…Until Now
  Faith Hickman Brynie (Twenty-First Century Books, 2002)

- The Omnivore’s Dilemma (for high-level readers)
  Michael Pollan (Dial Books, 2009)
Bibliography:


When did people start studying sleep?

Awesome question! People have been curious about sleep and dreams since…well, probably since they started sleeping and dreaming! And even though the American Medical Association didn’t recognize sleep medicine as a specialty until 1996, more than 3,000 years ago the Egyptians were treating people with sleep problems. A lot has been learned about sleep in the past 60 years. Until the 1950s, people didn’t think much happened during sleep but scientists have since learned that our brains are very active during sleep and that good sleep is key to good health.

What goes on in the body while we sleep?

Even though someone who is sleeping looks pretty relaxed, his or her brain is still busily making connections and storing memories. How do we know this? Scientists can produce images of brain activity with a special machine called an electroencephalograph. They attach sensors called electrodes to a person’s head so they can see the activity of the brain on an electronic display. The picture of brain activity is called an electroencephalogram (EEG) and the wavy patterns that this process generates are called “brain waves.” Brain waves follow a pattern that is repeated several times per night.

Dream Journal:

Date: March 23, Friday
To bed: 10 pm
Awake: 6 am
Dream #1:

I was eating a purple pear and it suddenly grew to be the size of a small car and sprouted huge wings. I hopped on board and I flew to my friend’s house in Canada, where he had built me a small shelter out of reeds where I could live all summer next to a swamp and near a lake. I was excited to go swimming every day but I had forgotten my towel at home and was very worried I would not be able to go into the water. We found a carnivorous plant and I was afraid it would eat my cat.
What is REM?

While REM is the name of a band from the ‘90s and I do love their song “Man on the Moon!”, REM refers to the stage of sleep when body muscles are totally relaxed and most of a person’s dreaming takes place. REM stands for “rapid eye movement”—and that’s a great name for it. Watch someone in REM sleep and you will see their eyeballs doing a crazy dance under their eyelids!

Is all sleep the same?

I’m so glad you asked that and the short answer is no! When we sleep, our bodies follow a cycle that repeats about 4 or 5 times during an 8-hour period of sleep. During each sleep cycle, the sleeper passes through different stages of sleep including non-REM and REM. Brain waves show different types of activity taking place during each stage. As the sleep cycle repeats throughout the night, the periods of REM sleep tend to become longer. Growth hormones are released during the deep-sleep stage, so kids and teenagers spend more time in this phase than older people. Infants spend about half their sleep time in REM sleep, compared to adults who spend just 20 percent of their sleep time in this stage.

Why do we sleep?

One of the most exciting things about sleep science is that we’re still learning about what happens during sleep! Many of the reasons why we sleep remain an exciting mystery, though scientists have proven that sleep is essential to survival. Studies have shown that if laboratory rats are kept awake too long they start to die. Other experiments show that sleep is essential to a healthy immune system—meaning sleep helps keep us from getting sick. Most scientists agree that sleep allows your body to:

- Restore itself—Studies show that even though part of your brain is asleep, other parts are busy helping you heal and grow.
- Support memory and learning—While you sleep, your brain is making sure all that thinking you did during the day is being organized and stored in your “memory bank.”
- Relax—After you’ve been busy all day eating, watching, listening, playing, learning and putting off practicing the piano, sleep gives your body the break it needs so you can do it all again tomorrow.

Fun Facts:

- If you sleep eight hours a day, by the time you turn 80 you’ve slept 233,600 hours—or almost 27 years!
- They better be sweet dreams because we have about 1,825 a year. By the time you’re 12 years old, you’ve had nearly 22,000 dreams.
- Your cat feels well-rested with 12 hours of sleep a day, while a giraffe needs only two!
- Researchers believe that the “clock” gene (responsible for waking and sleeping in humans) is one reason you might be more of a night person or a morning person.
How much sleep do I need?

Kids from 5 to 12 years old need 10 to 11 hours of sleep each night. How much did you get last night? It’s hard to get enough but worth giving it your best shot. Sleep needs vary from person to person. To find your sleep “sweet spot,” check in and see if you feel tired during the day. If you’re dragging through your favorite sport or art class, try to get more sleep. Many people find the quality of sleep improves if they go to bed at the same time every night.

What is a healthy sleep environment and what are some healthy pre-bedtime habits?

A healthy sleep environment is a fancy way of saying a good place to sleep. What makes some places better than others? Check out the lists below. You can also make a difference in the quality of your sleep by practicing healthy pre-bedtime habits.

Your Sleep Environment

Things that improve sleep

- Your lights and electronics are off and your window shades are closed.
- Your room is the perfect sleep temperature (a bit on the cool side).
- Sleeping without your pets.

Your Pre-Bedtime Habits

Habits that improve your sleep

- Going to bed and getting up at the same time every day.
- Doing something calming before bed, like taking a bath or listening to quiet music and not playing computer games right before bed or watching scary or fast-paced TV shows.
- Drinking a glass of warm milk before bed and not eating chocolate, coffee, ice cream or soda before bed—they contain caffeine and sugar, which can make it hard to relax.
- Eating healthy food during the day.
- Getting plenty of physical activity during the day.
- Not being physically active right before you try to sleep.

“In sleep we are all equal.”

- Spanish Proverb

“Sleep is better than medicine.”

- English Proverb

“The beginning of health is sleep.”

- Irish Proverb
Poor sleep habits in high school are linked with a lower grade-point average (GPA), according to a study presented at the SLEEP 2011 meeting in Minneapolis, MN., during the 25th Anniversary Meeting of the Associated Professional Sleep Societies. After going to college, the same students reported even worse sleep habits. The students with poor sleep habits also showed a greater decline in their college GPAs.

According to the American Academy of Sleep Medicine, good sleep habits promote healthy sleep and include a relaxing bedtime routine and avoiding caffeine in the afternoon and evening.

What is a sleep study?

A sleep study is when doctors measure how much and how well you sleep. These studies are used to find out if someone has a sleep illness, like sleep apnea.

For a sleep study, you go to a sleep lab or center and go to sleep! Really—the room where the tests are done usually looks a bit like a hotel room, with a bed, chair, TV and lamp. Sleep technicians put sticky patches called electrodes on the person’s face, head, chest, arms, legs and a finger. It doesn’t hurt—but it does look kind of funny. The person having the test goes to sleep and while they are sleeping the electrode sensors record brain activity, eye movements, heart rate and rhythm, blood pressure and the amount of oxygen in the blood. The sleep technician monitors the results on a computer screen in another room. Doctors can use the test results to find out why the person is not sleeping well and to try to help them.

How does weight relate to sleep apnea?

Sleep apnea is a common sleep problem related to breathing. A person with sleep apnea breathes fine during the day but when they go to sleep the walls of their breathing tubes tighten and they cannot get enough air. Because not enough oxygen is getting into their blood, they wake up, but not so much that they are fully awake, just enough for them to take a deep breath to restore their oxygen levels. People with sleep apnea can wake up hundreds of times a night, which really messes with their sleep cycle. They are not getting enough restful sleep and begin to feel very tired during the day. Sleep apnea is more common in very overweight people because fat collects around the walls of the breathing tubes.
Activity: Sleep Sleuths

Students will wake up to the science of sleep in this role-playing activity as they work together to diagnose and “treat” a patient’s sleep challenges.

Main Concepts: Students learn that science has shown that sleep can be disrupted by environmental factors and poor sleep habits and that a lack of proper sleep impacts a person’s ability to do daytime activities. They also learn that sleep studies help doctors diagnose people’s sleep problems as they step into the role of a researcher to write personalized sleep action plan for a classmate.

Materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing paper (blank on both sides)</td>
<td>4 sheets per student pair</td>
</tr>
<tr>
<td>Felt pens or colored pencils</td>
<td>Assortment</td>
</tr>
<tr>
<td>Photocopies of Sleep Study Script (provided at end of lesson)</td>
<td>1 copy per student pair</td>
</tr>
<tr>
<td>Photocopies of Sleep Science Information: From the Notebook of Hugo Knapp (optional student reading)</td>
<td>1 per student (optional)</td>
</tr>
</tbody>
</table>

Time: 60 minutes

Do This!

1. As a class, brainstorm ideas about things that help students sleep better or sleep worse. Make a chart on the board listing the ideas.

2. With your students, review the Slumbertorium Sleep Science Information: From the Notebook of Hugo Knapp, focusing on the sleep environment and sleep hygiene sections. In particular, see the question, “What do you mean by a healthy sleep environment?” and the related table. How do the ideas in the reading differ from the students’ ideas of things that contribute to good or poor sleep?

   [Note: The Sleep Science Information: From the Notebook of Hugo Knapp may be photocopied for your students and provided as background reading material.]

3. Ask each student to find a partner.

4. Explain that students will be enacting a pre-sleep study exchange between a sleep researcher and a sleep study patient—a high school student named Jesse. They will not be performing this exchange for the class, just reading it aloud with their partner. Have student pairs choose one person to read the part of the sleep researcher and one person to read the part of Jesse.

5. Ask the students to read the script aloud to each other or have a pair of students read to the whole class. As they read the script, the students are to look for clues in Jesse’s sleep hygiene (habits) and sleep environment that are affecting his ability to sleep.
6. When they are done, have student pairs work together to sketch a map of Jesse’s sleep environment (using colored pens/pencils) on one side of a sheet of drawing paper (Paper #1). The map should be inspired by what Jesse told the sleep researcher during his “room review.”

<table>
<thead>
<tr>
<th>Paper #</th>
<th>Side 1</th>
<th>Side 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Map of Jesse’s room (by both partners)</td>
<td>List of things that might make it difficult for Jesse to sleep (by both partners)</td>
</tr>
<tr>
<td>2</td>
<td>Alternate map of Jesse’s room (by both partners)</td>
<td>Prescription to help Jesse sleep better (by both partners)</td>
</tr>
<tr>
<td>3</td>
<td>Partner 1’s map of her own room (by partner 1)</td>
<td>Partner 2’s prescription for partner 1 (by partner 2)</td>
</tr>
<tr>
<td>4</td>
<td>Partner 2’s map of his own room (by partner 2)</td>
<td>Partner 1’s prescription for partner 2 (by partner 1)</td>
</tr>
</tbody>
</table>

7. On the back of their map of Jesse’s room, ask students to list anything about Jesse’s sleep habits that could be making it difficult for him to sleep.

8. Next, ask each pair to work together to draw an alternate room map on one side of a second sheet of drawing paper (Paper #2), designing a more restful sleep environment for Jesse.

9. On the back of their alternate room maps, challenge the pairs to write an action plan for a healthier sleep environment by listing things that Jesse could change about his habits/sleep environment to get a better night’s sleep.

10. Have the student pairs share their maps with the class. If they were the sleep researcher, what would they say to Jesse and his parents? Is there anything about Jesse’s habits that makes them wonder about their own sleep habits and sleep environment? What would it take for them to change?

11. In this next part of the activity, students get to act as sleep researchers. Have each student sketch a map of his own bedroom, including as many details as possible, especially those that might make it harder or easier to fall asleep (Paper #3 and #4).

12. Next, have the partners exchange maps. Have them take turns asking questions of each other about sleep habits including:
   - How many hours of sleep do you get each night?
   - Do you go to bed at the same time each night?
   - What is your bedtime routine?
   - What do you eat before bed?
   - Do you have caffeine during the day? When?
   - Do your pets sleep in your room?
13. Now have the students put on their “sleep researcher hats.” On the back of his or her partner’s map (Paper #3 and #4), have each student write a action plan for healthy sleep that his or her partner could use to improve his or her sleep environment/habits. Ask each partner to be as detailed as possible. After they’re done writing the action plan, read the sleep action plan to one another and explain why he or she selected the specified action plan and discuss them.

14. Have a closing discussion in which you invite students to share with the class something they learned about their own sleep environment or a change they could make to improve their sleep environment/habits.

15. Health/math extension: Students investigate how their personal sleep environment and pre-sleep habits affect their feelings of restedness and how a good night’s sleep (or a bad one) impacts the body system as a whole. This exercise requires a two-week period of observation. During the first week the student keeps a sleep diary while continuing with his or her usual habits. During the second week, the students continue to keep a sleep diary and introduce changes based on what they have learned about how their environment and habits impact sleep. (For ideas about what they might change, have them refer to the action plan they received in the Sleep Sleuths activity.) Each day in their diary, they should rate their feelings of restedness at waking, noon and bedtime on a scale of 1–10 (1 being very, very tired; 10 being very well-rested). Ask students to compare and contrast their feelings of restedness before and after instituting the changes and then graph them.

16. Sleep pledge: Wellbody Academy is committed to helping us change behavior to improve our health and wellness. To help kids focus on tangible changes they can each make in their own lives, we’ve provided pledge certificates after each activity for you to use with your students. You can choose to make a pledge as a class or allow each student to come up with his or her own. After the Sleep Sleuths activity, ask students to pledge to make one change to improve their sleep habits or sleeping environment—ask them to be as specific as possible.
Sleep Pledge

Wellbody Academy of Health & Wellness

This certificate hereby proclaims

I pledge to change about my sleep environment or sleep habits to support my healthy body every day!

Signed,

[Name]

(Your signature)

Adrian Wellbody

Professor Adrian Wellbody

Wellbody Academy of Health & Wellness
**Sleep Study Script**

Jesse is a high-school junior (11th grader) who is having trouble sleeping. This situation has been getting worse over the past year and his parents decided to have him do a sleep study to find out if there is something physically wrong with him that is affecting his sleep. The following exchange is a pre-sleep study conversation between a sleep researcher and Jesse.

Sleep researcher: Jesse, thanks for filling out your pre-sleep study questionnaire and room review.

Jesse: Sure. I am so tired of not getting any sleep. (Yawn).

Sleep researcher: In looking over your questionnaire, I see that you don’t usually go to bed at the same time each night.

Jesse: Yeah, I work late a couple of nights a week and it’s hard to keep a regular schedule.

Sleep researcher: Does that make it hard to get to school on time?

Jesse: Yeah, I’m late a few times a week but my mom writes an excuse for me ‘cause of my job and all.

Sleep researcher: But I bet it would be great not to be tired all the time.

Jesse: Definitely. I had to quit soccer because I couldn’t stay awake—seriously! I’m goalie and I fell asleep and missed blocking a goal at one game. It was an epic fail.

Sleep researcher: Well, hopefully our team can help get you back on track and maybe even back on the soccer field.

Jesse: Cool.

Sleep researcher: Looking at your questionnaire, I see that on average you get about 7 hours of sleep a night.

Jesse: On a good night. Often, it can be less.

Sleep researcher: On your worst nights, how much sleep do you get?

Jesse: Sometimes none—but that doesn’t happen often. I guess a couple of times a week I get only 3 or 4 hours.

Sleep researcher: But otherwise it’s 7 hours?

Jesse: And sometimes 8 if I’m lucky on the weekends. But I work then, too.

Sleep researcher: Okay, now let’s go over your room review together.

Jesse: ‘Kay.

Sleep researcher: Looks like you have a computer, TV and your cell phone by your bedside?

Jesse: Yup.
Sleep researcher: Are those off or on at night?

Jesse: Well, that depends on if I fall asleep with a movie or show on. I usually have my computer on to make sure I don’t miss anything on Facebook. And my cell—it’s off if it doesn’t ring. (Laughs).

Sleep researcher: What kind of movies and shows do you watch?

Jesse: I love cop shows and horror movies. I want to be a make-up artist—to transform those guys’ faces like that would be so cool!

Sleep researcher: And do you answer your phone at night?

Jesse: Only if it’s my girlfriend’s ring. And I don’t text after 2 a.m.

Sleep researcher: But otherwise your text alerts wake you up?

Jesse: I guess, yeah, that’s true. But someone might need something. So, you know, I leave it on for that.

Sleep researcher: And do you eat anything as a snack while you watch your shows?

Jesse: Usually—I’ll snack on some pizza or something like that and ice cream. Oh, and a soda.

Sleep researcher: And that’s usually after 9 p.m.?

Jesse: Yup—if I ride my bike home from work I microwave something and have a soda.

Sleep researcher: And how long is that bike ride?

Jesse: About 3 miles. It’s a great workout—mostly uphill on the way home. Gotta do that to make up for eating ice cream!

Sleep researcher: And what is your diet like during the day?

Jesse: You mean do I eat a lot of junk food, right?

Sleep researcher: (Laughs). Well, that’s part of it.

Jesse: Well, I do eat kind of on the run—it’s hard to plan ahead because I’ve been so tired. (Yawn). I usually just grab a donut for breakfast and eat some cookies or something for a snack. I’m hungry after school so I just grab a bag of chips or something, then I eat a good dinner at home if I’m not at work. My mom’s a great cook. Then there’s my after-work snack routine I told you about already.

Sleep researcher: Okay, thanks. And do you have any pets?

Jesse: Yes—we have three cats. I’ve had them since they were kittens and they love to curl up and sleep by my feet or on my legs. It’s hilarious—and kind of crowded sometimes! They come and go all night but they have a cat door.

Sleep researcher: Do they ever wake you up?

Jesse: Sometimes, but only just for a second or something. Unless they bring in a mouse—then it gets a little hectic and gross. I have to try and save the mouse—but that only happens once in awhile.
Sleep researcher: How often, if you had to guess?
Jesse: Maybe once a month or so.
Sleep researcher: And how about your window—do you have curtains or a shade?
Jesse: No, this might sounds funny, but there’s this really cool tree outside my window I like to stare at when I can’t sleep—it’s just a black outline at night—but I like it anyway. And I like to watch the moon when I can.
Sleep researcher: Okay, that’s all I have for now. Thanks, Jesse. Next, we’ll get you set up for the sleep study.
Jesse: Kay, thanks.
Resources

Glossary:

**Brain waves**: The wavy patterns that show brain activity on an EEG.

**Electroencephalograph**: A machine that measures brain activity.

**Electrode**: Is an electrical conductor used to make contact with a nonmetallic part of a circuit. This conductor is attached to the body and sends signals to an electroencephalograph that measures brain activity

**Electroencephalogram (EEG)**: A picture of brain activity used by sleep scientists.

**Non-REM sleep**: The four stages of sleep that lead to REM sleep.

**REM sleep**: Rapid eye movement sleep; the stage of sleep when we dream most.

**Sleep apnea**: A sleeping illness where someone does not get enough oxygen in their blood; it is generally associated with obesity (being very overweight).

**Sleep environment**: The setting where you sleep and the things in the place where you sleep.

**Sleep habits**: The things you do before you sleep and the time you go to bed and wake up. These habits impact the quality of your sleep.

**Sleep stage**: There are five stages of sleep defined by different types of brain activity and physical activity.

**Sleep study**: When doctors measure how much and how well someone sleeps. These studies are used to find out if someone has a sleep illness, like sleep apnea.

Good ZZZs Careers:

This list can be used as a resource for a class activity focused on careers. Ask students to research one of the careers and make a poster of someone doing that job. Have them share what they learned with the class. Or, invite someone who works in one of these careers to come talk to your class.

- **Neurologists** are doctors who focus on diseases of the nervous system. They use tests that produce images of the brain to help diagnose diseases, including sleep disorders.

- **Respiratory therapists** work with people who have trouble breathing, such as children with asthma, to help them breathe easier and get enough oxygen. They work with doctors to decide when someone needs a breathing machine to help them sleep.

- **Sleep scientists** study animals and humans to learn about sleep and sleep disorders. They analyze data from sleep studies and develop treatments for sleep disorders.

- **Sleep specialists** are doctors trained in the study of sleep and sleep disorders. They often work in sleep centers where they see patients who have difficulty sleeping.

- **Sleep technologists** assist sleep specialists in diagnosing and treating sleep-related disorders. They are responsible for monitoring patients during sleep studies.
Suggested Websites for Teachers:

- KidsHealth
  http://kidshealth.org/kid/

- Neuroscience for Kids: Sleep
  http://faculty.washington.edu/chudler/sleep.html

- Talk About Sleep
  http://www.talkaboutsleap.com

- National Sleep Foundation
  http://www.sleepfoundation.org

  http://www.ninds.nih.gov/disorders/brain_basics/understanding_sleep.htm

Book Resources for Students (4–6):

- Be the Boss of Your Own Sleep: Self-Care for Kids
  Timothy Culbert and Rebecca Kajander (Free Spirit Publishing, Inc., 2007)

- 101 Questions about Sleep and Dreams That Kept You Awake Nights…Until Now
  Faith Hickman Brynie (Twenty-First Century Books, 2006)

- Sleeping for Good Health (Living Well)
  Shirley Wimbish Gray (The Child’s World, 2004)

- Sleep and Rest in Animals
  Corine Lacrampe (Firefly Books, 2003)

Bibliography:

- A brief history of sleep medicine. Talk About Sleep.


- Neuroscience for Kids: Sleep
  http://faculty.washington.edu/chudler/sleep.html


  http://www.nhlbi.nih.gov/health/health-topics/topics/slpst/during.html
What are germs?

Germs are tiny living things that we can’t live with and can’t live without. Some are essential to our good health and others can make us sick. They are so small that you can’t see them without a microscope (they are also known as microorganisms or microbes) but they are so strong that they can make you stay in bed sick for a week. Here’s the dirt on the four major types of germs:

• **Bacteria**—Only one cell in size, these microbes can survive outside or inside our bodies. Certain types of bacteria are responsible for strep throat, cavities and ear infections. But not all bacteria are bad! Our bodies rely on certain bacteria to digest our food and to stay healthy.

• **Viruses**—Many viruses make us sick because they kill healthy cells. These viruses invade cells, taking over and multiplying. Most of them need living things to survive. Viruses cause the common cold, flu, chickenpox and measles.

• **Fungi**—We’re not talking toadstools here, though they are related. Fungi cannot make their own food so they depend on plants, people and other animals for their nutrition. They thrive in damp, warm spots in or on the body and can cause athlete’s foot and ringworm.

• **Protozoa**—These moisture-loving, single-celled microorganisms can spread disease through water. If they get inside your body, it may result in diarrhea.

Are all germs bad?

No! In fact, we need bacteria to get nutrients from our food—they help break it down so our body can use it. Other bacteria help keep us from getting sick by making it hard for disease-causing organisms to find a place to set up shop.
Why should I wash my hands?
They don’t look dirty!

Ah, it’s probably a good thing we can’t see all the microbes covering our bodies—just seeing their sheer numbers might make us sick! But they are the reason why it’s so important to wash our hands. We are all busy touching things all day long…and our hands are busy picking up all kinds of bacteria. Good hand-washing is one of the best (and easiest!) ways to keep yourself, your friends and your family healthy. I find I have more fun washing my hands if I sing a song while I do it. You can use mine if you like, and remember to sing it twice while you wash in order to get truly clean hands!

Hand Washing Ditty
(Sing to the tune of “Happy Birthday to Me”)

Clean warm water and soap
Wash and lather my hands
Scrub my nails and my fingers
Now I’m done, dry and fly!

Hand Washing Ditty Diagram:

- Water
- Lather
- Don’t forget between your fingers!
- Rinse
- Dry

Science Now:
SMOKING KILLS THE MOUTH’S HEALTHY BACTERIA
-Columbus, Ohio

According to results released in Feb. 2012 from an Ohio State University study, smoking changes the mouth’s bacteria, making it easier for smokers to get mouth-related diseases such as gum disease. This helps explain why smokers suffer from more mouth diseases than non-smokers. A healthy mouth hosts a thriving community of healthy bacteria that helps prevent disease. Smoking destroys the good bacteria and allows the disease-causing germs to move in, multiplying more rapidly than they would in a non-smoker’s mouth.

In the study, which compared the mouths of 15 healthy smokers and 15 healthy non-smokers, not only did researchers find that the smokers were missing the mouth’s “good” bacteria, but they showed higher levels of a substance released by certain cells when they are fighting an infection. The bodies fight against infection, or immune response, causes swollen gums and can lead to bone loss. The smokers’ results showed that their bodies were fighting the harmful bacteria as well as attacking healthy bacteria. The researchers are still studying the results, trying to explain how smoking upsets the body’s ability to distinguish healthy and unhealthy bacteria. Study results were published in the journal, Infection and Immunity.
How do germs get into my body?

Germs can enter your bloodstream through a wound (that's why it's important to wash and cover a cut or sore) and through your nose and mouth. Germs hang out on doorknobs and desks, just waiting to hitch a ride from your hands to your mouth. This is why washing your hands is so important—especially before you eat and after you use the bathroom. Some germs can travel through the air and that's where good sneeze/cough etiquette comes in. If possible, sneeze or cough into a tissue and throw it away. If you don’t have a tissue, sneeze or cough into your elbow to keep from spraying germs all over the room (and blasting your friends and family!) and to keep germs off your hands.

What causes body odor?

This is a stinky question with an even smellier answer. When your feet or armpits start to smell, it's because the bacteria trapped on your skin are releasing organic acids. These acids feast on your dead skin cells and the oil on your skin, then produce waste that stinks! How’s that for making you want to run to the shower?

How can I fight bad breath?

I’ve got two words for you: brush and floss. Poor dental hygiene is the number one cause of bad breath. If bits of food get stuck in your teeth, they start to rot and smell. Though some kinds of food (like onions and garlic) can cause a stinky “hello,” stubborn bacteria clinging to your tongue and teeth are largely to blame. If you have good dental hygiene and still have bad breath that won’t go away, see a dentist. You may have a tooth or gum infection.

What’s a cavity?

A cavity is a hole in your tooth caused by bacteria in plaque. Plaque is a slimy coat of bacteria that is constantly forming on teeth. Germs in plaque make acids that can eat away at the enamel, or top layer, of your teeth. If you don’t get rid of these bacteria by brushing and flossing, they keep chomping away at your teeth and can make a hole, or cavity. If the cavity does not get filled by a dentist, the bacteria can get to the root of the tooth where the nerves are, causing a painful toothache.

Only floss the teeth you want to keep!
What do you mean by good oral hygiene?

“Oral” means mouth and “hygiene” is just a fancy word for cleanliness (or “being clean”)! Scientists have discovered strong connections between a healthy mouth and good long-term overall health. Here is my six-step program for a sparkling clean mouth:

1. Brush your teeth with fluoride toothpaste after every meal or at least two times a day, especially before bed.
2. Brush up and down on both the inside and outside of your teeth, making little circles with your toothbrush as you go.
3. Gently brush your gums and tongue.
4. Floss your teeth once a day to remove plaque and food stuck between your teeth.
5. Cut back on sweets and sugary drinks, like soda and fruit juice (check the nutrition facts label to find out if a drink has sugar in it and don’t forget sugar’s aliases as listed in the Nutrition Science Information: From the Notebook of Rosemary Baker). Drink plenty of water!
6. See your dentist twice a year.

What is gum disease?

Gum disease has nothing to do with bubblegum—unless you chew gum with sugar in it. Also called periodontal disease, this disease happens when the bacteria in plaque buildup and infect your gums and teeth. If left unchecked, it can even destroy gum tissue and the bones that hold your teeth in place. The best way to prevent gum disease is—you guessed it—our old friends brush and floss!
Activity: Don’t Bug Me

In this investigation, students find themselves in the middle of a fake flu epidemic. Students step into the shoes of an epidemiologist, a doctor who studies the causes, distribution and control of diseases, and try to determine how to prevent the spread of the flu.

Main Concepts: Students learn how easily germs are spread and how to prevent spreading them, use pH paper and learn how it works and practice problem-solving skills as they try to find the source of a simulated flu epidemic.

Materials:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH paper—strips or roll (can be obtained from sites such as Edmunds Scientifics at <a href="http://www.scientificsonline.com">http://www.scientificsonline.com</a>)</td>
<td>1 strip per student</td>
</tr>
<tr>
<td>Paper cups (8 ounce size)</td>
<td>1 cup per student</td>
</tr>
<tr>
<td>Water</td>
<td>To fill cups</td>
</tr>
<tr>
<td>1/3 cup measuring cup</td>
<td>1</td>
</tr>
<tr>
<td>White distilled vinegar</td>
<td>16 ounce bottle</td>
</tr>
<tr>
<td>Pen/pencils</td>
<td>1 per student</td>
</tr>
<tr>
<td>Notebook paper</td>
<td>1 per student</td>
</tr>
<tr>
<td>Photocopies of Don’t Bug Me Worksheet (provided at the end of the lesson)</td>
<td>1 per student</td>
</tr>
<tr>
<td>Photocopies of Hygiene Science Information: From the Notebook of Dustin McLean (optional student reading)</td>
<td>1 per student (optional)</td>
</tr>
</tbody>
</table>

Time: 45–60 minutes

Teacher Prep:

- **Before students arrive in class**, prepare paper cups for the activity and leave them on a table at the front of the room. Fill each cup with 1/3 cup of water but set aside one cup and leave it empty. Fill this empty cup with 1/3 cup of vinegar and no water—this cup will be the source of the “flu” outbreak. *Keep the vinegar cup set apart or identify it in a way that the students will not notice and be sure to note to whom you give it.*

- If you purchased a roll of pH paper, rather than strips, cut the paper into strips about 3” long, one per student.

Adaptation: For a class of 10–15 students, have students only exchange their liquid with three people.
Do This!

1. Invite students to share ideas about how flu germs are spread. Make notes on the board (e.g., uncovered coughs and sneezes; shaking hands; touching doorknobs; drinking out of the same cup; touching a desk with germs on it and then touching your nose or mouth). For ideas, see the *Hygiene Science Information: From the Notebook of Dustin McLean* (in particular, see the question, “How do germs get into my body?”).

[Note: The *Hygiene Science Information: From the Notebook of Dustin McLean* may be photocopied for your students and provided as background reading material.]

2. Ask students: How long do you think flu germs can stay alive on surfaces such as desks, tables and doorknobs? (Answer: 2–8 hours.)

3. Explain to students that they will be doing a “simulation” or acting out of a flu outbreak in their classroom. Scientists often use simulations as part of experiments as a way to study processes and to see what could happen on a larger scale.

4. Students are going to have two roles in this activity: a student and an epidemiologist. By using the data they collect, as a class they will observe how quickly infectious diseases, like the flu, can be spread.

5. Hand out copies of the *Don’t Bug Me Worksheet*, one per student. During the simulation, students will fill in the data chart on the worksheet for each person with whom they exchange liquid.

[Safety Note: Tell students they should not smell or drink from their cups.]

6. Invite students to come up to the front of the classroom to get a cup of clear liquid. Hand cups to each student, making sure you remember to whom you gave the cup of vinegar. Tell students: If for some reason you think you are the source of the infection, please keep that information to yourself.

7. Explain to students that they will now go around the classroom and exchange the liquid with 5 different classmates (for a class of 25–30 students), recording each interaction on their worksheets. For each exchange, tell students to pour all of the liquid from one cup into the other student’s cup and back again, mixing the liquids together, and then pour half back into each cup. This simulates being exposed to flu germs in the environment. Remind them to record data on each interaction on their worksheets.

8. Once the students have exchanged with 5 different classmates, have them return to their desks with their cup of liquid and set it back down on their desk.

9. Explain to students how pH paper works.

What is pH paper and how does it work?

pH paper has been treated with chemicals that turn a certain color in *acidic* conditions (e.g., vinegar) and another color in *basic* conditions (e.g., soapy water). The color the paper turns indicates the *pH* of the liquid. (For this activity, refer to the pH scale that comes with the paper you are using to see the color it will turn in acidic conditions.) pH stands for “potential hydrogen” and is a measurement of how many hydrogen ions are in a liquid. The more hydrogen ions a solution has, the more acidic it is.
10. Next, the students will use strips of pH paper to test whether their liquid is acidic. In this simulation, an acidic response means a student is “infected” with the flu virus.

11. Pass out one strip of pH paper to each student and have them hold the strip at one end and dip the other end halfway into their liquid. Have them hold it in the liquid for a count of two, then remove it. Ask them to observe the color on the part of the strip they dipped in the liquid. Did it turn the color indicating “acidic” on your pH paper scale or not?

12. Ask students to raise their hands if their strip turned the color that indicates “acidic.” These students are infected with influenza.

13. Ask the students what they think about the number of students who became infected. Many people in the class were infected within just a few minutes. In real life, infections do not spread as quickly as they did in this simulation. Why do infections spread more slowly in real life?

14. Explain to students that this simulation showed how a disease would spread if it only required close contact, such as from kissing or sharing eating utensils, to do so. However, some diseases, such as the common cold, can be spread by germs in the air (from an infected person coughing and sneezing) that can be breathed in by a healthy person. Also, the influenza virus can live for hours on surfaces (such as doorknobs and countertops), after being touched by an infected person allowing it to spread to a healthy person who touches a surface and then touches his eyes, nose or mouth.

15. Now ask your students to put on their epidemiologist “hats.” Ask students how the data they collected could help them find the likely source of the infection. [Hint: Everyone can start by crossing off people on their worksheets who are not infected because they are not the source of the outbreak.]

[Note: Infected students could not have become infected by people who are not infected, so by process of elimination, students can probably pinpoint the exchange during which they became infected. Once they determine this, by comparing the times of these key exchanges with the others who are infected, they may be able to narrow down the possible sources to the initial two exchanges between “Patient #1” and the second person to become infected.]

16. Once the class believes they have narrowed down the likely identity of the first infected person, reveal the true identity of “Patient #1,” who was given the cup containing vinegar at the start of the activity. Invite Patient #1 to stand up and then invite the first person they exchanged with in Round #1 to also stand. Next have those students stand who subsequently exchanged liquids with these “infected” students in Round #2, and then each subsequent round. This is a good visual way to show the spread of infection throughout the classroom.

17. Ask the students to take out a piece of notebook paper and spend three minutes trying to write down everything and everyone they came into contact with that day, from the time they woke up until that minute. “Contact” can include objects that they touched like doorknobs, bus seats, playground equipment and lunch tables, as well as people they touched by sharing food, giving a high five, etc. Ask students to consider: If they really did have the flu, what does their list of contacts tell them about how the disease could be spread at school?
18. Lead a class discussion about why flu is such a serious health concern and how it is spread. Information on how to prevent the spread of germs is available at the following websites:

**Stopping the Spread of Germs at Home, Work, and School**
CDC Seasonal Influenza (Flu)
http://www.cdc.gov/flu/protect/stopgerms.htm

**Everyday Prevention Actions That Can Help Fight Germs, Like Flu**
Centers for Disease Control and Prevention

19. Discuss what students can do to keep from spreading the flu or other infectious diseases. (The two simplest things are washing hands thoroughly with warm soap and water and covering their mouth with a tissue when they cough or sneeze—or cough or sneeze into their elbow). Allow time for students to record several ideas on their worksheets.

20. Discuss how stopping the spread of germs not only protects each student’s friends and family but also people in the community who may get very sick if infected, including the very young, elderly or those with poor immune systems.

21. **Creative arts extension:** Ask students to design colorful disease prevention posters for your school. They can choose a topic from the following resource:

   **“Everyday Preventive Actions” Flyer**
   Centers for Disease Control and Prevention

22. **Hygiene pledge:** Wellbody Academy is committed to helping us change behavior to improve our health and wellness. To help kids focus on tangible changes they can each make in their own lives, we’ve provided pledge certificates after each activity for you to use with your students. You can choose to make a pledge as a class, or allow each student to come up with his or her own pledge. After the Don’t Bug Me activity, ask students to pledge to make one change to improve their hygiene habits that will protect themselves and others from germs, like the flu, that can cause disease. Ask students to be as specific as possible.

**Credit:** This activity was adapted from the Project-Based Inquiry Science experiment “Simulate the Spread of Disease.” http://www.its-about-time.com/pbis/pbis.html
# Don’t Bug Me Worksheet

**Liquid Exchange Data Chart**

<table>
<thead>
<tr>
<th>Round #</th>
<th>Name of Person You Exchanged With</th>
<th>Time of Exchange</th>
<th>Infected? (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Were you infected? Yes ____ No ____

How can you personally reduce the spread of the flu, cold or other infectious disease? List at least three ideas:
This certificate hereby proclaims to be a hygiene hero! I pledge to help stop the spread of disease and support my own (and others') health every day!

Signed,

Wellbody Academy of Health & Wellness

(name)

(your signature)

Arden Wellbody
Professor Arden Wellbody
Glossary:

**Bacteria:** Microscopic organisms that, depending on their type, can help you survive or can make you sick.

**Cavity:** A hole in your tooth.

**Epidemiologist:** A doctor who studies the causes, distribution and control of diseases.

**Germs:** Microscopic organisms including bacteria, viruses, fungi and protozoa.

**Gum disease (periodontal disease):** When plaque builds up and infects the gums and the bones that hold your teeth in place.

**Immune System:** A system of biological structures and processes within the body that protects against disease.

**Influenza/Flu:** A viral infection that attacks your respiratory system – your nose, throat and lungs. Influenza, commonly called the flu, is not the same as the stomach “flu” viruses that cause diarrhea and vomiting.

**Oral Hygiene:** The actions you take to keep your mouth clean. Good oral hygiene includes regular brushing and flossing.

**Plaque:** A slimy coat of bacteria that forms on teeth.

**Simulation:** Acting out or imitating a real-life experience in an experiment.

**Tooth Decay:** When a tooth is eroded by the bacteria in plaque.

**Tooth Enamel:** The outermost layer of a tooth.

Clean Careers:

This list can be used as a resource for a class activity focused on careers related to hygiene. Ask students to research one of the careers and make a poster of someone doing that job. Have them share what they learned with the class. Or invite someone who works in one of these careers to come talk to your class.

**Cytotechnologists** study human cells to identify abnormal or diseased cells in samples taken from a person.

**Dentists** are doctors who treat problems with teeth, gums and other parts of the mouth. They provide information and instruction on oral health.

**Dental hygienists** clean teeth and examine teeth and gums. They educate people on ways to maintain oral health.
Diagnostic medical sonographers produce images of the inside of the body using sound waves in a manner similar to X-rays. These images can help doctors diagnose a variety of physical problems.

Epidemiologists are doctors who study the causes of diseases and how to prevent their spread. They also analyze ways to prevent the spread of disease.

Health educators teach people about ways to stay healthy. They create materials, teach classes and oversee health education programs.

Immunologists are doctors who focus on the immune system, including allergies.

Medical illustrators are artists who create visual representations of anatomy, disease processes and other medically-related information.

Microbiologists are doctors who study microscopic organisms such as bacteria. They perform experiments involving microorganisms and analyze the results.

Suggested Websites for Teachers:

- KidsHealth
  http://kidshealth.org/kid/
- American Dental Association for Kids
  http://www.ada.org/353.aspx
- Centers for Disease Control and Prevention “Handwashing: Clean Hands Save Lives”
  http://www.cdc.gov/handwashing/

Book Resources for Students (4–6):

- *Keeping Clean (Slim Goodbody’s Good Health Guides)*
  Slim Goodbody (Gareth Stevens Publishing, 2007)
- *Personal Hygiene and Good Health*
  Shirley Wimbish Gray (The Child’s World, 2004)
- *101 Questions about Your Immune System You Felt Defenseless to Answer…Until Now*
  Faith Hickman Brynie (Twenty-First Century Books, 2000)

Bibliography:

- KidsHealth
  http://kidshealth.org
- Colgate Oral and Dental Health Resource Center: Oral and Dental Health Basics


Centers for Disease Control and Prevention Fact Sheets:
http://www.cdc.gov/flu/protect/stopgerms.htm
Overview of Post-Visit Activities

General Exhibit Activity: Health Behavior Poll: Post-Visit

In this follow-up to the pre-visit Health Behavior Poll, students join in a statewide science project by completing this simple post-visit classroom survey, ideally to be completed at least one week following the visit to Wellbody Academy. They can compare the results for their class with data from other kids in classes across Washington state.

Post-Visit Activity Ideas

Three ideas are provided to help you design meaningful post-visit activities for students to encourage them to reflect on what they have learned from visiting Wellbody Academy. These activities include: Shining Stars, Get Better Now Machines and Dear Professor Wellbody.

Life-Changing Careers

A list of careers related to The Loft exhibit area in the exhibit can complement a variety of career-focused classroom activities.

Health and Fitness Classroom Based Assessment (CBA)

Information is provided about the Washington State Health and Fitness Classroom Based Assessment (CBA) “Mrs. Trimble’s Muffins.” This CBA is an elementary-level assessment focused on nutrition content. Alignment information shows connections between the CBA and Wellbody Academy exhibit, as well as connections to the pre-visit nutrition activity “Pack a Snack” and nutrition mentor Rosemary Baker’s notebook pages, that are featured in this Educator’s Handbook.

Take-Home Letter to Parents/Guardians

This take-home letter can be photocopied and distributed to students for them to share with their parents/guardians within a day or two of visiting Wellbody Academy. The letter provides conversation starters to help parents talk to their children about their field trip experience, as well as how to learn more about health and wellness.
General Exhibit Activity

Health Behavior Poll: Part 2

Following up on the pre-visit health behavior poll, students can join a statewide science activity by completing this simple pre-visit questionnaire! By providing answers about his or her health behaviors, each student will be able to compare his or her personal results with those for his or her class both before and after visiting Wellbody Academy as well as with data from other students across Washington state who have visited Wellbody Academy.

Main Concepts:
Students will assess changes to their health behaviors after visiting Wellbody Academy by comparing their responses to their pre-visit poll responses.

Materials:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student responses from initial Health Behavior Poll Handout</td>
<td>1 per student who took the pre-visit poll</td>
</tr>
<tr>
<td>Health Behavior Poll Handout</td>
<td>1 per student</td>
</tr>
<tr>
<td>Pencils</td>
<td>1 per student</td>
</tr>
<tr>
<td>Optional: Computer with internet access</td>
<td>1</td>
</tr>
</tbody>
</table>

Time: 15 minutes
This should be conducted at least one week from the class’s visit to Wellbody Academy to do this activity!

Do This!

1. Tell students that they will be answering the same questions they answered before they visited Wellbody Academy at Pacific Science Center, plus three new ones to see if what they learned on the field trip helped them make any changes to their health habits.
2. Pass out one copy of the Health Behavior Poll Handout to each student.
3. Ask students to write their name at the top and the letter B (to signify post-visit poll.)
4. Depending on students’ reading level, either ask students to answer the questions on their own or go through the questions one by one, helping the students mark their answers.
5. Collect students’ handouts.
6. Later on, after compiling the students’ results, you can show the students how they answered as a class so they can compare their personal answers with those of the class overall (e.g., half of the class had breakfast this morning).
7. Pass out students’ pre-visit and post-visit polls.

8. Challenge students to look for changes in their answers. Did their behaviors change? How? Why?

9. Compare the class’s results on the board. Were there changes? What was the biggest change? What does this tell them? Are there other changes they’d like to make?

10. Compare the class’ results to those found on Wellbody Academy website. How does your class compare to other classes from around the state? Have students look at the responses from students in other grades. Does the grade the student is in make a difference?

11. Submit the data online from both the pre-visit and post-visit surveys. You will also have access to the aggregate data that you can share with your class for comparison. The data entry is straightforward and should take no more than 15 minutes to complete, if you have the surveys consolidated (e.g., number of students that answered most days for question 1 on the pre-visit and then on the post-visit). It will be particularly valuable if most of the students completed both the pre- and post-visit surveys.

12. As an incentive and to thank you for taking the time to enter your class’s data we will send you a thank you in the form of four exhibit passes to Pacific Science Center that you can use with your family or friends. The data entry can be done here: https://www.surveymonkey.com/s/Wellbody_HealthPoll

13. If the students would like to have a “healthy competition” with their own scores (trying to make healthy changes), ask if they would like to take on a health challenge as a class. Choose one area where your class could improve. You can take the post-visit survey again in a month to see if the class met their challenge.

14. Take home idea: Students can create a health challenge at home with their family. What health habit would they like to change/improve? Have them report the results back to the class.
HEALTH BEHAVIOR POLL

1. What grade are you in?

2. How often do you eat breakfast?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

3. How often do you eat fresh fruit?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

4. How often do you eat fresh vegetables?
   a. Every day
   b. Most days (4 to 6 times a week)
   c. Some days (1 to 3 times a week)
   d. Rarely

5. Do you brush your teeth in the morning?
   a. Always
   b. Sometimes
   c. Rarely

6. Do you floss your teeth once a day?
   a. Always
   b. Sometimes
   c. Rarely

7. In the morning, how do you usually feel?
   a. Rested
   b. A little sleepy
   c. Very tired

8. How often do you wash your hands before meals?
   a. Always
   b. Sometimes
   c. Rarely

9. How often do you wash your hands after using the bathroom?
   a. Always
   b. Sometimes
   c. Rarely

10. How many times during the week are you physically active for 30 minutes or longer (such as playing a sport, taking a walk, riding your bike)?
    a. Every day
    b. Most days (4 to 6 times a week)
    c. Some days (1 to 3 times a week)
    d. Rarely

11. How important do you feel it is to:
    A. Eat Healthy Foods
       a. Very Important
       b. Kind of important
       c. Not important
    B. Exercise Regularly
       a. Very Important
       b. Kind of important
       c. Not important
    C. Get a good night's sleep
       a. Very Important
       b. Kind of important
       c. Not important
12. What was your favorite activity at Professor Wellbody's Academy?

13. How much new information did you learn about your health at Professor Wellbody's Academy?
   a. A lot
   b. Some
   c. Not much
   d. None/nothing new

14. Name 2 things you can do to be healthier.
   1. ________________________________
   2. ________________________________
Activity Ideas

Activity Idea: Shining Stars
Lead a discussion about people and/or pets that are “shining stars” in the students’ lives—those who create a reliable, loving support system for the students. Studies have shown that people with close support networks are healthier than those without. Strong support networks are connected to people having lower blood pressure, less stress and stronger immune systems.

Ask what qualities someone needs to be a shining star. How does that person help you? Be specific. For example, “when I visit my grandma she cooks my favorite meal” or “my soccer coach helps me be a better athlete.” Students draw or trace large star shapes on their paper, then draw pictures inside the stars of the people/animals that are their own shining stars.

Activity Idea: Get Better Now Machines
Ask students to draw a fantastical health machine (the crazier the better!) that addresses one of the main themes of Wellbody Academy. Does their machine help people eat better? Does it provide ways for them to be physically active? Maybe it washes their hands for them, or makes sure they get to bed on time. Or all of these! Let the students’ imaginations run wild. Post their pictures around the room and have them try to “sell” their idea to their classmates. Which machine do the students think would have the biggest positive influence on people if they used it and why?

Activity Idea: Dear Professor Wellbody
Invite students to write letters or postcards or to draw pictures that tell Professor Arden Wellbody about one thing they learned at Wellbody Academy that really stuck with them. Have they changed any of their health behaviors since visiting the Academy? If so, what and how? If not, why not? Do they plan to make changes in the future? What do they need to start? Wellbody Academy will post representative letters and drawings on its website. Please scan and send us copies of your “Dear Professor Wellbody” responses to ProfessorWellbody@pacsci.org.

Life-Changing Careers
This list can be used as a resource for a class activity focused on careers in behavior change and aging. Ask students to research one of the careers and make a poster of someone doing that job. Have them share what they learned with the class. Or invite someone who works in one of these careers to come talk to your class.

Art therapists use the process of making art to assess and treat people with mental and emotional disorders.

Counseling psychologists help people understand and manage challenges in their lives.

Gerontological counselors help older adults cope with declines in their health and address problems such as dementia and depression, as well as changes in ability, lifestyle or family issues.

Gerontologists are doctors or scientists who study the process of aging and the living environments of older people.
Mental health and substance abuse social workers work with people with mental illnesses or addictions. They provide information on resources to help people cope with these illnesses.

Occupational therapists treat people with injuries, illnesses or disabilities by helping them improve skills needed for daily life, such as eating and writing.

Program directors for nursing or retirement facilities develop and manage activities and events to support the residents’ physical, mental and social well-being of the elderly people who live in the facilities.

Social and behavioral science researchers are scientists who study the process of behavior change.

Bibliography:
For the Washington State elementary school level Health and Fitness Classroom Based Assessments (CBAs), students are asked to demonstrate a basic understanding of a variety of wellness topics, including nutrition.

Professor Wellbody’s Academy of Health & Wellness exhibit and related nutrition activity “Pack a Snack,” as featured in this Grades 4–6 Educator’s Handbook, are both aligned with the Health and Fitness CBA “Mrs. Trimble’s Muffins.” The exhibit and nutrition activity can help support your students’ learning of key nutrition concepts in preparation for the related CBA.

For the “Mrs. Trimble’s Muffins” assessment, students must be able to analyze nutrient groups on a nutritional label for positive and negative nutritional value and explain why people should either limit or include these nutrients in their diet. Students must also identify foods that make up a balanced meal and explain how the chosen foods can benefit the human body.

Following are descriptions of exhibit features and the corresponding nutrition activity and how they will help support students as they learn and apply these concepts.

CBA Connections to the Wellbody Academy Exhibit

The following Wellbody Academy interactive stations cover key concepts that support students’ preparation for the “Mrs. Trimble’s Muffins” CBA. The table below presents the Washington State Grade Level Expectations (GLEs) assessed by the CBA and Wellbody Academy exhibit elements that help support student learning related to each GLE. All of these interactive stations are located within the Cafédium portion of the exhibit with the exception of Sugar Burners, which is located in the Playdium area.

<table>
<thead>
<tr>
<th>GLEs aligned to the CBA</th>
<th>Wellbody Academy exhibit elements aligned to GLE</th>
</tr>
</thead>
</table>
| 1.5.1: Analyzes how the body's function and composition are affected by food consumption. | An Apple a Day…  
Animated presentations teach about key nutrients in certain foods, and how those nutrients support the body. |
| Sugar Burners | Students bike and crank their way to sugar awareness by using these fun movement machines to experience just how much time it takes to burn off the calories of an average 12 ounce soda, and learn why their bodies craves sugar in the first place. |
### GLEs aligned to the CBA

1.5.2: Analyzes information from dietary evaluation and self-assessment in order to improve performance.

### Wellbody Academy exhibit elements aligned to GLE

| **Food Analyzer** | In this fast-paced game of food choices students fill a plate of food from the conveyor belt and scan their choices to learn their nutritional content. Students’ challenge is to create a balanced meal. |
| **Customized Calorie Budgetizer** | Students find out their daily calorie budget based on their gender, weight, age and activity level. They learn that calories provide fuel for the body as well as how many calories their body needs to run smoothly. |
| **Burger Planet** | In this fast-food role-play game, students find out the calorie “price tags” of different fast-food food choices. Their challenge is to lower the overall calorie “cost.” |
| **Portion Practice** | In this activity, students learn how to equate serving sizes with easy-to-visualize objects such as a deck of playing cards, a baseball and an 8-ounce plastic bottle. |
| **Portion Distortion** | Does the size of your plate influence how much you eat? How about the size of your spoon and fork? Are serving sizes deceiving? This interactive display helps students find out. |

---

**CBA Connections to the “Pack a Snack” Nutrition Activity and Nutrition Science Information:**

*From the Notebook of Rosemary Baker*

The table below presents the Washington State Grade Level Expectations (GLEs) assessed by the CBA and the elements of the *Grades 4–6 Educator’s Guide* that help support student learning related to each GLE.

**Pack a Snack Activity**

In this nutrition-related investigation, students practice making predictions, learn how to read nutrition facts labels, learn about and compare types of fat in chip brands and assess the portion size of their usual snack size.
**Nutrition Science Information: From the Notebook of Rosemary Baker**

Rosemary’s notebook pages provide an overview of basic nutrition content. This information can be shared with students verbally or as an assigned reading.

<table>
<thead>
<tr>
<th>GLEs aligned to the CBA</th>
<th>“Pack a Snack” and Nutrition Science Information content aligned to GLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.5.1:</strong> Analyzes how the body’s function and composition are affected by food consumption.</td>
<td>Rosemary’s notebook pages provide students with an overview of the five nutrients needed by the human body, as well as information on vitamins and minerals, eating a balanced diet, calorie budgets and specific information about fat and sugar.</td>
</tr>
<tr>
<td><strong>1.5.2:</strong> Analyzes information from dietary evaluation and self-assessment in order to improve performance.</td>
<td>“Pack a Snack”: In this nutrition-related investigation, students practice making predictions, learn how to read nutrition facts labels, learn about and compare types of fat in chip brands and assess their usual snack size.</td>
</tr>
</tbody>
</table>

**CBA Vocabulary Connections**

In addition to providing nutrition content, the Nutrition Science Information: From the Notebook of Rosemary Baker included in this Educator’s Guide also features many of the same vocabulary terms that are introduced in the “Mrs. Trimble’s Muffins” CBA, including these listed below:

- Balanced Diet
- Calcium
- Calorie
- Carbohydrate
- Fat
- Nutrient
- Nutritional Facts
- Protein
- Saturated Fat
- Trans Fat
- Unsaturated Fat
- Vitamin A
- Vitamin C

**Resources:**

*Health and Fitness Classroom Based Assessments (CBAs)*
Washington State Office of the Superintendent of Public Instruction
http://www.k12.wa.us/HealthFitness/Assessments.aspx

*Mrs. Trimble’s Muffins*
Elementary-level Nutrition Classroom Based Assessment (CBA)
Washington State Office of the Superintendent of Public Instruction
http://www.k12.wa.us/HealthFitness/CBAs/Elementary/ElemMrsTrimblesMuffins.pdf
Take-Home Letter to Parents/Guardians

Dear Parents and Guardians,

Your child recently visited Professor Wellbody’s Academy of Health & Wellness during a recent class field trip to Pacific Science Center. The goal of the exhibit is to inspire people to be more knowledgeable about their own health and wellness—and to have fun while they’re doing it! The choices each of us makes every day has a profound effect on our health and well-being. Concerned by the rise in preventable health challenges such as type 2 diabetes and obesity, Pacific Science Center has chosen an inspiring and interactive environment to help children and families in the Pacific Northwest better understand how to make healthier choices in their everyday life in day-to-day life.

Through a variety of playful, hands-on activities, visitors discover and participate in four main theme areas: fitness, nutrition, sleep and hygiene. In between bouncing and jumping to shoot balls at targets, learning about fast-food options by role-playing at a drive-through and getting sprayed by a “sneeze wall”—children begin to view wellness as an approach to living each day in a way that creates a better place to grow and learn.

When you talk to your child about his or her visit to Wellbody Academy, you might want to ask:

- What kind of physical movement did you do in an Academy game?
- What is a calorie budget? Do you know yours?
- What's one new food that you would like to try? Why?
- How can you make your room a better place to get the sleep you need?
- What are two things that are good to do and two things that are best to avoid if you want a healthy mouth and teeth?
- What is one new thing you can do to improve your health? How can I help you do it?

If you would like to learn more about how to begin making health and wellness changes at home, please visit our website at pacificsciencecenter.org/wellbodyacademy. For additional background on some of the science behind the exhibit, as well as resources and book recommendations, please check out Wellbody Academy Educator’s Handbook for your child’s grade level (K–3 or 4–6), also available on the website.

There is so much to see and do at Wellbody Academy that your child may well want to come back for more. We hope to welcome your whole family here soon.

To your good health!

R. Bryce Seidl
President and CEO
Pacific Science Center