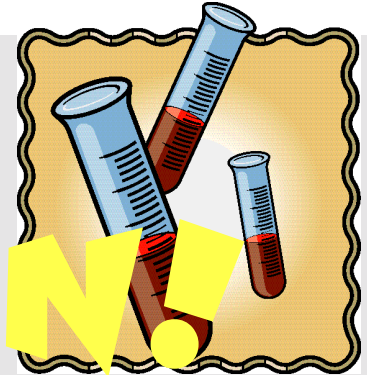




Massachusetts Society for
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HEADS ON!



FOR



HEALTHY LIVING

Nutrition Facts		Vitamin Facts	
Serving Size 2 Tbsp (30g) Servings Per Container about 15		Serving Size 2 Tbsp (30g) Servings Per Container about 15	
Amount Per Serving Calories 20		Per Serving	
Calories from Fat 0		from Fat 50	
% Daily Values*		% Daily Values*	
Total Fat 0g	0%	Fat 3.5g	8%
Saturated Fat 0g	0%	Cholesterol 20mg	7%
Cholesterol 20mg	2%	Sodium 20mg	1%
Sodium 20mg	1.3%	Total Carbohydrate 1g	0%
Total Carbohydrate 1g	0%	Dietary Fiber 0g	0%
Dietary Fiber 0g	0%	Sugars 2g	0%
Sugars 2g	0%	Protein less than 1g	0%
Protein less than 1g	0%	Vitamin A 4%	Vitamin C 0%
Vitamin A 4%	Vitamin C 0%	Calcium 2%	Iron 0%
Calcium 2%	Iron 0%	Vitamin A 4%	Vitamin C 0%
Vitamin A 4%	Vitamin C 0%	Calcium 2%	Iron 0%
Calcium 2%	Iron 0%		

A TEACHER'S GUIDE TO ACCOMPANY THE MSMR
PEOPLE & ANIMALS: UNITED FOR HEALTH[®]
INTERACTIVE HEALTH & SCIENCE CALENDAR

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73 Princeton Street, Suite 311 - North Chelmsford MA 01863

Tel. 978.251.1556

Fax 978.251.7683

msmr@att.net

www.msmr.org

Heads On! for Healthy Living®

A Teacher's Guide to Accompany the MSMR **People & Animals: United for Health®**

Interactive Health & Science Calendar

Dear Colleagues,

The MSMR **People & Animals: United for Health®** interactive health and science calendar is fun, engaging, and brimming with information that benefits both people and animals. What is most important about it, is that it is a wonderful instructional tool for getting students to think effectively, and for giving them experiences with science as a process of inquiry, and a way to make sense out of our world.

This handbook of classroom activities, **Heads On! for Healthy Living®**, has been developed to be used in conjunction with each of the twelve **People & Animals** calendar themes. These activities are designed to promote two things that are highly connected: good thinking and good science.

About Good thinking:

From research, we know that the process of becoming a skillful thinker is neither automatic nor incidental. It doesn't happen just through study or through experience. It requires deliberate instruction and guided practice in the use of specific critical and creative thinking skills, and the cultivation of attitudes or dispositions that foster these.

A very effective way to teach thinking is to *integrate* the instruction of specific critical and creative thinking skills and thinking attitudes *directly into content area lessons*. This promotes highly active learning in which students begin with and build on what they know, determine what needs to be known, and devise and implement strategies for finding out. Because the focus is on *making meaning for themselves*, students learn content more profoundly and expansively, retain it better, and apply it more readily across curriculum and in their own lives.

Our primary role in this process is to help guide and refine students' thinking. We structure content so that students can actively explore it through concerted use of particular thinking skills, direct them to think about their thinking, and create opportunities for them to apply what they learn in and out of school.

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About Good Science:

At its core, science is a process of problem finding and problem solving - an active process of making sense out of our world through critical and creative thinking.

This, in fact, is the basis of science education reform as reviewed in the article, “Reinventing Science Education” (*Curriculum Update*, ASCD newsletter, Summer, 1995). Key points are that science instruction should be inquiry-based: students should pose their own questions, design and pursue their own investigations, analyze data, present their findings and raise questions about it. Teachers should build on what students know, create opportunities for them to make meaning for themselves, and help them rethink their misconceptions.

It is better for students to learn fewer concepts and understand them in greater depth rather than a great many topics in superficial ways. This is quite different from the traditional “telling approach” in which many topics are covered, and students are barraged with information which they try to memorize. The result is students who only *know* the science they’re learning rather than understand it.

About the Activities in this Handbook:

These activities incorporate many of the concepts about teaching thinking and science that have been mentioned above. Each activity has five sections:

- ❑ Overview and Objectives identifies the concept to be explored and the method for doing it.
- ❑ Thinking Processes identifies the thinking skill students will use to explore the concept, and also important attitudes and thinking dispositions that foster that thinking.
- ❑ Heads On! outlines an interactive procedure for engaging students in thinking actively about a puzzlement, problem or dilemma. Students use critical and creative thinking strategies to identify what they know, learn new things based on that thinking, share learning outcomes, and raise new questions. Teaching vehicles for these processes include small group work, cooperative learning, role-play, and simulation.

After completing an activity, students need to reflect on the thinking processes they used in it. How did they carry out their thinking? Were these effective ways to engage

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in this kind of thinking? How might they improve their abilities to think in this way?

Metacognitive questioning such as this reinforces students' understanding of the use of a particular thinking skill and thinking attitudes. It also facilitates transfer to other areas.

- ❑ Making Connections provides suggestions for further applications of the thinking and learning students did. Students need to learn to connect what they already know to new learning.
- ❑ More to Discover and Think About offers suggestions for ongoing, independent learning. Further questions to explore and issues to consider are proposed.

Students will need sufficient time for these activities. As we know, good thinking and good science take time! As students become involved in pursuing ideas, they will recognize the need for more time and request it. And for good reason. Heightened awareness (newfound awareness, in some cases!) of their own abilities to think imaginatively and critically is very motivating. We can all attest to that!

We wish you success in using this handbook and lots of mutually exciting growth for you and your students.

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The MSMR thanks Nina Greenwald, Ph.D. for drafting the original HEADS ON! for Healthy Living teacher's guide to accompany the People & Animals: United for Health® calendar.

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Ways to Stay Healthy

Overview and Objectives:

Thinking and acting preventively is fundamental to controlling the spread of illness and disease. Using “think-pair-share”, students identify what they know about how to stay healthy and prevent disease, raise questions about what they need to know, and consider how they might find out.

Thinking Processes:

Skills: generating possibilities (fluency, flexibility, originality, elaboration)

Attitudes: willingness to consider many and different ideas

Heads-On! (Thinking Actively):

In “think-pair-share”, a question is raised or a problem posed. First, students think alone, then think about it with a partner, then share their ideas with the class.

1. Ask students to think alone for a few minutes about the following question. Encourage them to think of many ideas and to list them.

What are all the things I know about how to stay healthy?

2. Now students think about this with a partner. They can increase their ideas by combining and piggy-backing.

3. Pairs share their ideas with the class. List these on the board. Encourage everyone to think of more ideas to add.

4. The class puts these ideas into different categories (e.g., Personal Experiences; Things Learned in School, etc.).

5. With their partners, ask students to raise questions about *what they need to know* to stay healthy and prevent disease, and how they might find out.

Each question and suggestions for how to find out can be written on a piece of colorful paper and placed around the room to remind students of the thinking they have done.

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Making Connections (applying & integrating learning):

- Students can explore global practices on health and disease prevention. What ideas do people in other countries have?
- Students can make a list of healthy practices in their own families.

More to Discover & Think About...

- scientific discoveries about how to stay healthy
- changes people need to make in their thinking to be healthier
- people who promote preventive thinking (e.g., nutritionists, fitness experts, herbalists)

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The Defense Department

Overview and Objectives:

The immune system is the body's defense department. A metaphor, which uses one idea to express another, can be a powerful tool for learning. In this activity, students create their own metaphors to communicate their understanding of the components of the immune system and their functions.

Thinking Processes:

Skills: identifying similarities between two things

Attitudes: perceiving from unusual perspectives

Heads-On! (Thinking Actively):

1. Discuss the meaning of metaphor with students.

Ask them if they have ever used an idea that is familiar to them as a way to express another idea. Give examples and ask them for some.

e.g., Life is a circus; A voice like thunder; Pretty as a picture, etc.

2. A metaphor is a way of showing similarities between two things not ordinarily connected or associated with one another.

What metaphors could be created about the body's immune system?

In small groups, students brainstorm for and list things they know about the immune system. They can use their calendars to help them.

As groups share their ideas, emphasize/add these to the list:

the body's first line of defenses against disease (skin, tears, saliva, mucous, body oils, perspiration, cilia, stomach acid); the body's hidden defenses (white blood cells, lymph nodes, antibodies)

3. In small groups, with a partner, or individually, students create a metaphor about a part of the immune system. Discuss the following sequence which will guide their thinking:

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- a. List all the things you know about the defense you chose (e.g., tears).
- b. What *other* things do you know about (objects, people, events, etc.) that might make a good metaphor (or be a good comparison) for this defense? (e.g. tears/floods, waterfalls, rivers)
- c. Which one of these would make the best metaphor?
- d. What details of the metaphor best fit the part of the immune system you are trying to describe ? (e.g., a flood washes things out, gets rid of things, keeps things moving).
- e. Match each item from “a” with an item from “d”.
- f. Put it all together to complete your metaphor. Begin with, _____(kind of body defense) is a _____ (the object, event, etc. you have chose to compare to the body’s defense).

4. Students can act out their metaphors and their classmates can guess the two things being compared. Using sound effects, music, and simple props might enhance the fun of this.

Making Connections (applying & integrating learning):

- Students can read and interpret metaphorical poems and stories about the immune system.
- Invite students to draw or illustrate how their immune systems behave when they are well and when they are ill.

More to Discover & Think About...

- careers in immunology
- the effects of stress, fatigue and nutrition on the immune system
- what’s special about the immune systems of newborn babies

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How Can We Tell When All Is Not Well?

Overview and Objectives:

Students identify symptoms of illness in people and animals and think about their significance. They share their observations of people and animals who are ill, and identify similarities and differences.

Thinking Processes:

Skills: analysis (comparing and contrasting)

Attitudes: objectivity; thinking flexibly

Heads-On! (Thinking Actively):

1. Create an even number of groups of equal size. Half the groups receive scenario #1 and the other half scenario #2.

#1 Think about a disease or an illness you have had.

What were your *symptoms*? How was your body letting you know that something was wrong?

Why do you think your body was acting in these ways? What do you think was happening inside your body that you were not able to see?

Discuss and list your ideas.

#2 Like people, animals get illnesses and diseases.

Think about an animal you know. Recall a time when you thought that animal might be sick.

What were the *symptoms*? What did you notice about its behavior?

Discuss and list your ideas.

2. Groups exchange scenarios and discuss and list their ideas.

3. Put these headings on an overhead projector. Ask each group to contribute examples from their lists:

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Symptoms of People & Animals Who Are Ill: How Alike?

_____ etc.

People & Animals Who Are Ill: How Different?

----- etc.

Further Ideas Suggested by Similarities and Differences between People & Animals?

----- etc.

Make copies for each student from the overheads.

Making Connections (applying & integrating learning):

- Students can show comparisons between people and animals that are ill through photographs, and drawings such as cartoons.
- Through creative writing, students can describe how people and animals are similar when they are not feeling well.

More to Discover & Think About...

- What's important to know about *zoonotic diseases*?
- What can be learned from animal studies about disease prevention?

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What Made You Sick?

Overview and Objectives:

Using inquiry as the method for collecting data, students make discoveries about prevention, treatment, and control of infectious diseases. Information gathered from peers, teenagers, parents and grandparents is put on matrices as a basis for summary and discussion.

Thinking Processes:

Skills: drawing conclusions based on information

Attitudes: objectivity; “healthy” skepticism (reserving final judgment until more information is available)

Heads-On! (Thinking Actively):

1. Make small groups and present students with this problem:

Suppose we wanted to know more about diseases that affect or have affected people of different ages: for example, young children, teenagers, your parents and grandparents, and great grandparents.

If you could interview people from different age groups about this, what would you want to know? What questions would you ask ?

Allow ample “think time” for discussion and recording of ideas. To aid question raising, suggest using words that appear on the calendar: e.g., bacterial; viral; immunization; transmitted; zoonotic; infectious; communicable; antibodies.

2. After sharing all their questions, the class selects five of these which everyone will use to survey people of different ages.

3. Each group enters the questions and the survey responses to them on a matrix. These matrices are shared with everyone and the basis for discussing these another important questions:

- What has been learned about diseases among different age groups?
- What changes have there been in the prevalence of certain diseases over time?
- What has caused these changes?
- What diseases still exist and why?

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Making Connections (applying & integrating learning):

- Students can investigate disease prevalence in other countries and think about the reasons for it.
- Students can brainstorm global strategies for disease control.

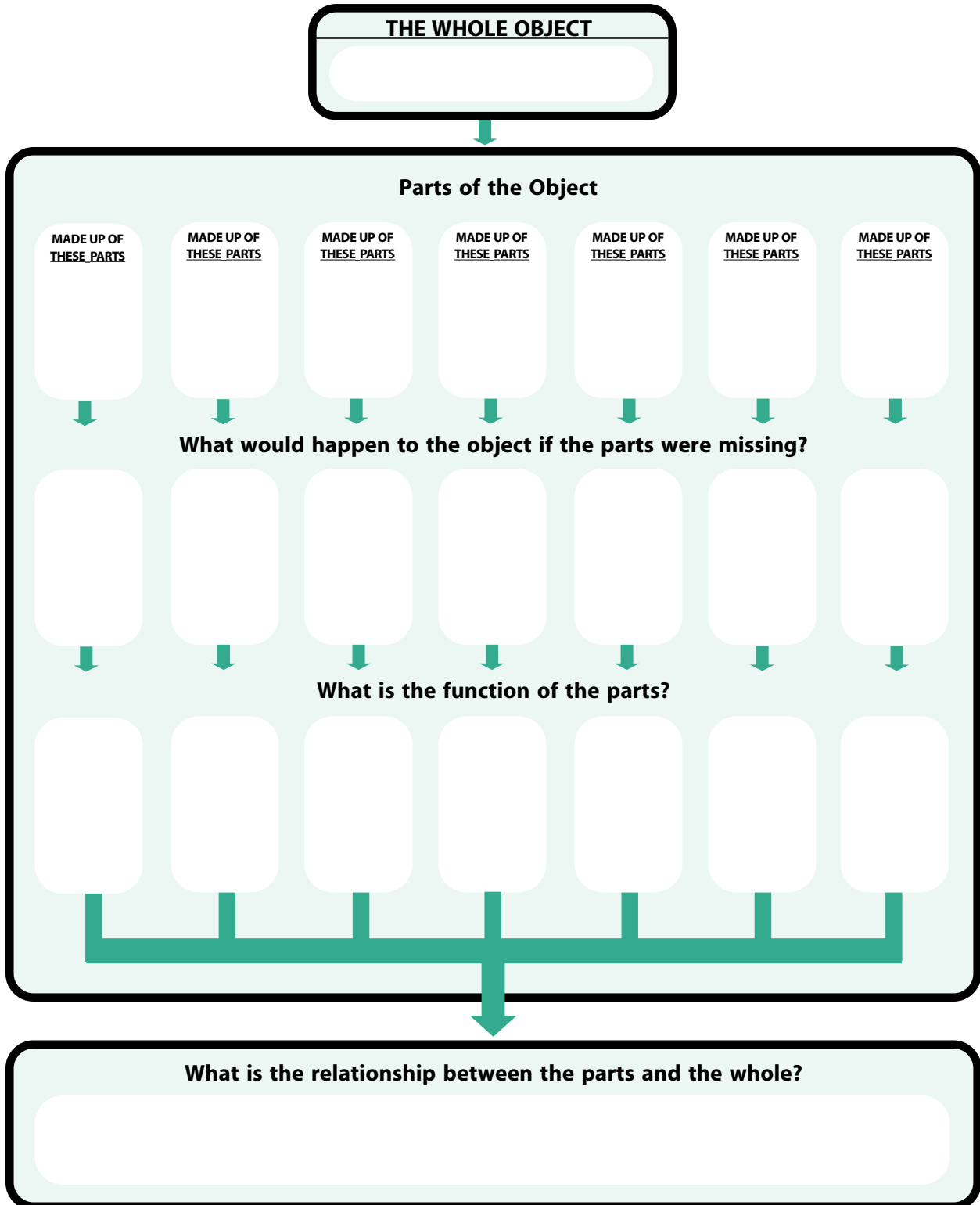
More to Discover & Think About...

- possibilities for having a disease-controlled future world
- people who rarely become ill and why this is so

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Determining Parts-Whole Relationships

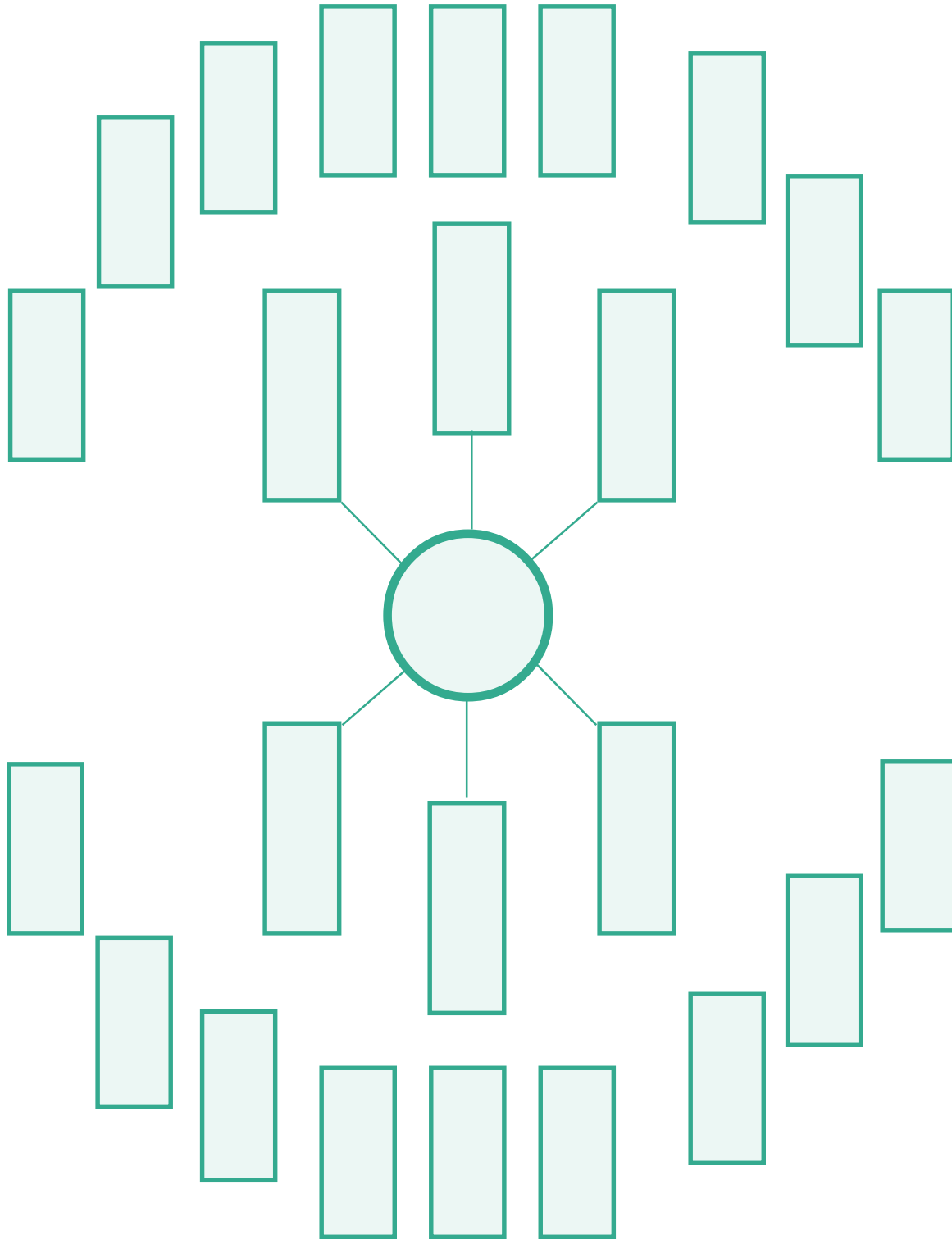


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WEBBING DIAGRAM



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If a Tortoise Can Live 138 Years...!

Overview and Objectives:

What do tortoises know that we don't! In other words, how can people live longer, healthier lives? Students use a webbing diagram to identify things that interfere with being able to live longer, then use the *SCAMPER* method of creative problem-solving to generate possibilities for changing these circumstances. Relationships between healthy living, medical care and life expectancy are emphasized.

Thinking Processes:

Skills: fluency (producing many ideas); flexibility (taking a different view); originality (production of new ideas); elaboration (expanding on ideas)

Attitudes: objectivity; flexibility

Heads-On! (Thinking Actively):

What do tortoises know that we don't...!!! In other words, how can people live longer, healthier lives?

Webbing Activity:

1. Divide the class into groups of five and give each one a webbing diagram. Ask them to write the following the middle circle:

“things that interfere with living longer”

2. On a separate paper, groups list things that can interfere with people being able to live longer.

They organize these possibilities into categories (e.g., poor nutrition, bad habits, etc.) and write the names of these categories in the dark rectangles on the webbing diagram.

3. Groups share ideas and add new ones to their webs.

SCAMPER Activity:

Give each group a SCAMPER handout. Discuss what each letter represents and how they can use this to generate ideas.

In the webbing activity, they identified and categorized things that interfere with people living longer lives.

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Ask them to select ONE of these categories, and to use SCAMPER to help them think of solutions for improving things in that category.

Many interesting ideas should emerge from this activity! Especially, emphasize those about the important relationships between healthy living, medical care, and life expectancy.

Making Connections (applying & integrating learning):

- Students can make a list of questions to ask on a trip they might take to a health food store.
- Students can create a page for their own “Book of World Records” that compares the life-spans of long-living people and animals.

More to Discover & Think About...

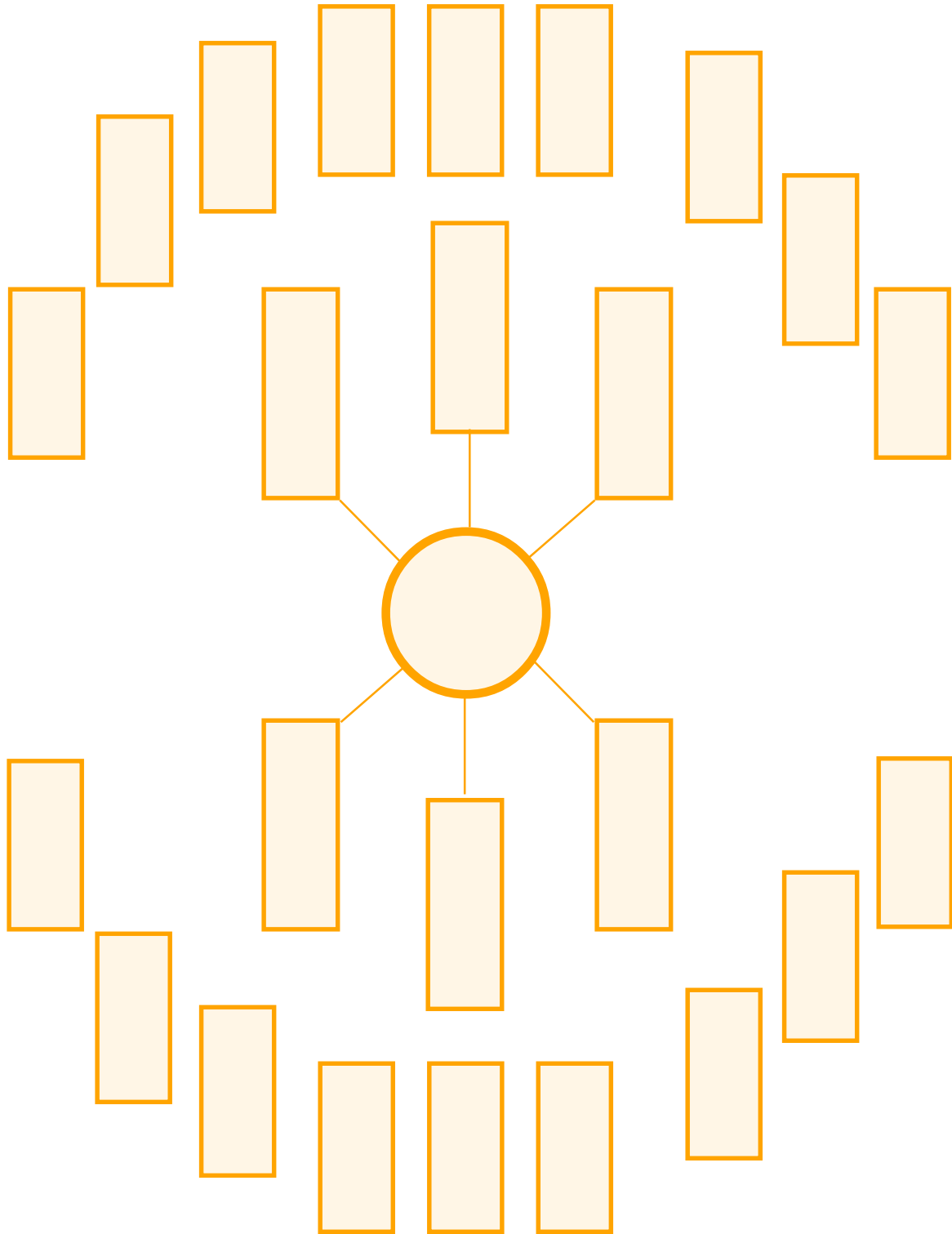
- how other cultures view aging
- biomedical contributions to help the elderly

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WEBBING DIAGRAM



October: Aging

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S - C - A - M - P - E - R **A Technique for Producing Ideas**

<u>S</u>	Substitute?	who else, what else, other ingredients, materials, places
<u>C</u>	Combine?	how about a blend? combine units? combine purpose? combine appeals?
<u>A</u>	Adapt?	what else is like this? what other idea does this suggest?
<u>M</u>	Modify?	new twist? change meaning, color, motion, sound, odor, form, shape? what to add? more time? greater frequency? higher, longer, thicker?
	Minify?	subtract, divide, eliminate, shorten, simplify, etc.
	Magnify?	enlarge, multiply, add, increase, exaggerate, etc.
<u>P</u>	Put to other uses?	new ways to use as is? other uses if modified? other places to use?
<u>E</u>	Eliminate?	what to subtract? smaller? condensed? miniature? lower? shorter? lighter? omit? streamline? understate?
<u>R</u>	Rearrange?	interchange components?
	Reverse?	other patterns? other layout? other sequence? transpose cause and effect? transpose positive and negative? how about opposites? turn it backward? turn it upside down? reverse roles?

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Animals, People & Aging

Overview and Objectives:

Which animals live long and why? What do these animals have in common with people? What can people learn from these animals about how to live long? Using ideas from the Calendar to launch their thinking, students gather and classify information about long-living animals, and compare and contrast this with people.

Thinking Processes:

Skills: classification (assigning characteristics to categories)

Attitudes: objectivity; flexibility

Heads-On! (Thinking Actively):

1. Individually, with a partner, or in small groups, students gather information about animals that live long (25 years or more). Encourage sharing with one another.
2. Students classify information by creating categories. Emphasize that there are many ways to categorize information: (e.g., according to dietary habits, intelligence and problem solving abilities, survival characteristics, etc.)
3. Using each of these categories, ask students to provide information they may have about people who live long lives.
4. In small groups, students discuss comparisons between long-living people and animals:
 - How are they similar? different?
 - What particular behaviors and characteristics contribute to long life in both animals and people?
 - What can people learn from animals about living longer?

Making Connections (applying & integrating learning):

- Students can observe older animals and relate what they see to things discussed in class.
- Students can add their own ideas about aging in people and animals to their calendar.

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More to Discover & Think About...

- what biomedical science is learning about how to slow down or reverse the aging process
- why some people and animals live short lives

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What's in a Picture?

Overview and Objectives:

Because people are living longer, the elderly are more a part of young people's lives. How do young people view aging, what are their preconceptions and experiences, what do they need to know? Through "carousel brainwriting" students free-write in response to pictures of aging people and then consider fact vs fiction.

Thinking Processes:

Skills: fluency (producing a large number of ideas); interpretation (assessing meaning)

Attitudes: acceptance of different ideas; respect for other viewpoints

Heads-On! (Thinking Actively):

1. Place 4-5 large pictures around the room that depict elderly people in a variety of circumstances and demeanors. These might be found in newspapers, magazines, and periodicals such as *Modern Maturity*. Above each picture, write:

What Does the Person In This Picture Make You Think About?

Tape a large sheet of easel or flip-chart paper below each picture and provide magic markers.

2. Divide the class into the same number of small groups as pictures. Each group starts out at a different picture. Each person writes their thoughts about the question that is asked.

The groups rotate around to each picture, adding to the previous group's responses. They write things that haven't been said.

3. At each picture station, review the responses. Ask the class to identify key or important themes. To facilitate this, ask students to look for similar ideas. Circle them with the same color.

4. Ask students to think more about the aging process:

- What are the advantages and disadvantages of getting old?
- What things are not (or may not be true) about getting old?
- What things can young people learn from older people?
- What can young people contribute to the health and well being of older people?

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Making Connections (applying & integrating learning):

- Through creative writing, students can describe how they would like their lives to be when they are older.
- Students can compare life-spans in America with other countries and brainstorm for why there are differences.
- They can read books about relationships between young people and old people; e.g., Rylant, Cynthia. *Miss Maggie*, Dutton, 1983; Mathis, Sharon. *The Hundred Penny Box*, Viking, 1975.

More to Discover & Think About...

- the impact of stereotyping and labeling on the elderly
- gerontology and other careers involving the elderly
- how companion animals contribute to the well-being of the elderly

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What's Cooking?

Overview and Objectives:

Proper diet and nutrition are essential for people and animals with diabetes. Using information about dietary needs and restrictions for diabetics, students create snack, main dish, and dessert recipes. They sample them in class, and submit them to the MSMR and to diabetes control programs.

Thinking Processes:

Skills: synthesis (bringing together parts or elements to form a whole)

Attitudes: openness to making new connections; desire to perceive new relationships

Heads-On! (Thinking Actively):

1. People and animals with diabetes have to be extremely careful about their diets and what they eat.

What's important to know about foods diabetics need to eat and foods they need to avoid?

Ask students what they know about this. In a large circle, round robin, give each a turn to contribute.

List their ideas on chart paper. Add information from the **People & Animals** calendar and supplementary materials.

2. Ask: What if you could create great tasting recipes for people and/or animals with diabetes? What would they be?

Make groups of three to five students, according to who is interested in main dish, snack and dessert recipes.

Each group brainstorms ideas for tasty, healthy recipes for diabetics.

They use the graphic organizer "Brainstorming to Generate Possibilities to aid their thinking.

3. Recipes are tested at home and should provide this information:

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- their names
- why it's okay for people (or animals) with diabetes
- ingredients and their amounts • steps to prepare it

4. Have a “tasting” party in class! Ask students to describe how to make their recipes.

5. Compile a class recipe book for diabetics. Students can send copies to the MSMR and to various diabetes control programs.

Making Connections (applying & integrating learning):

- Math is important in recipes! Students can learn more about measuring, fractions, and making conversions and equivalents.
- Students can find recipes from other cultures that are appropriate for diabetics.

More to Discover & Think About...

- differences between people and animals who have diabetes
- exercise programs for diabetics and why they work

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Brainstorming in Order to Generate Possibilities

PURPOSE
What are these possibilities for?



POSSIBILITIES



KINDS OF POSSIBILITIES					
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>



UNUSUAL POSSIBILITIES

NOVEMBER: Diabetes

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Symbol Stories About Diabetes

Overview and Objectives:

Students express things that are important know about diabetes in two imaginative ways: by converting information about diabetes into symbols, and by arranging these symbols in unique ways on a grid to tell a story about the disease.

Thinking Processes:

Skills: sequencing (fitting information together in an ordered or chronological way)

Attitudes: being systematic; inventiveness

Heads-On! (Thinking Actively):

1. Students can work with a partner or alone.

Using the *People & Animals* calendar, accompanying supplementary information, and additional resources, students list things that are important to know about diabetes in people and animals:

e.g. symptoms of the disease; different forms of the disease and how the body is affected; disease prevention and maintenance

2. Students share information, to include pictures and diagrams.

List their ideas, encourage question raising, and ask questions to check on their understanding.

3. Divide students into groups of five.

Ask them to create (simple) symbols to represent facts and ideas about diabetes.

e.g., sugar might be symbolized by cubes or a sugar bowl; insulin by a syringe or a tablet; the Islets of Langerhans by small islands Give them a story grid. Ask them to make up a story about diabetes in people and/or in animals using just their symbols.

Emphasize the importance of telling their story in a sequence - in the order in which things happen.

Use a separate box to tell each part of the story, starting with the top left box. Arrange the symbols in each box so that they relate to one another in some way.

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A complete story is told in eight boxes. For example, a story might be about how the pancreas stops making insulin or does not produce enough to handle glucose, and what happens in the blood as a result.

4. Afterwards, students can have fun sharing their symbolic stories and guessing what each one is about.

Making Connections (applying & integrating learning):

- What sequence of events led the Egyptians to discover diabetes?
- Interview someone with diabetes to learn about the steps they must take each day to control the disease.

More to Discover & Think About...

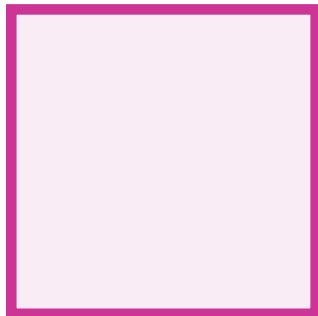
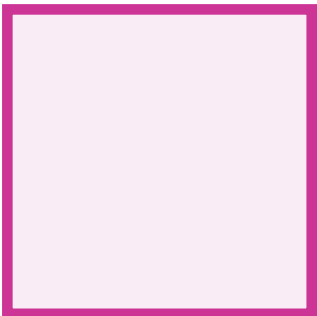
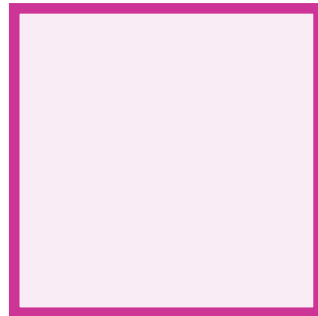
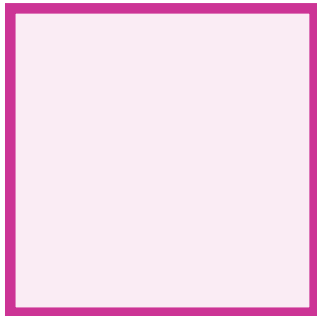
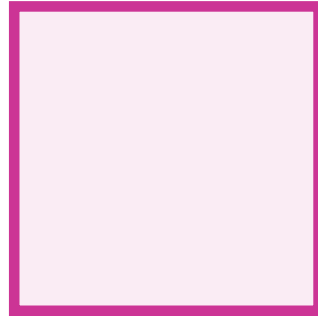
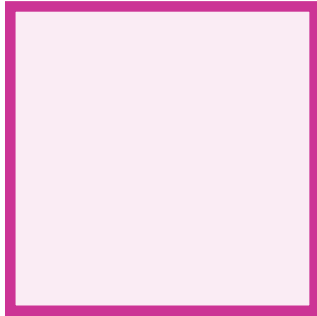
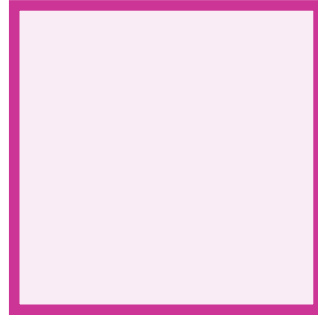
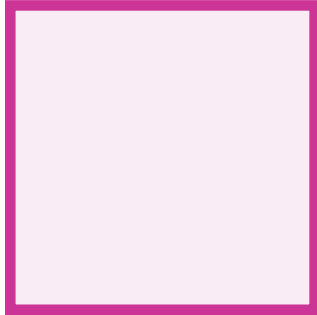
- diabetes research taking place at a research center near you (e.g., the Joslin Clinic in Boston)
- famous people who have diabetes and how they manage their lives

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A "SYMBOL" STORY



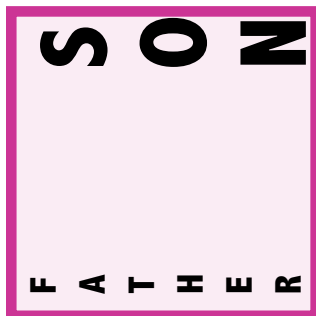
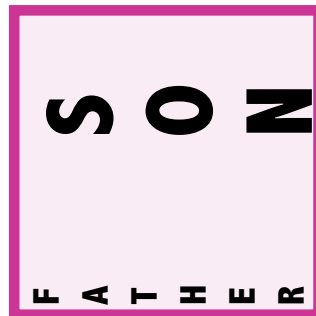
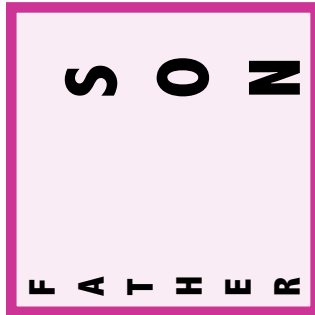
NOVEMBER: Diabetes

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WHAT'S THE STORY HERE? 1



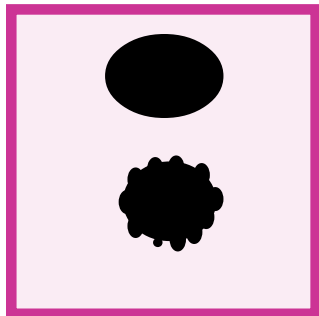
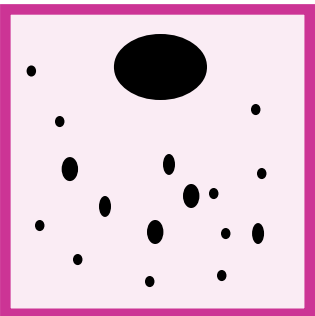
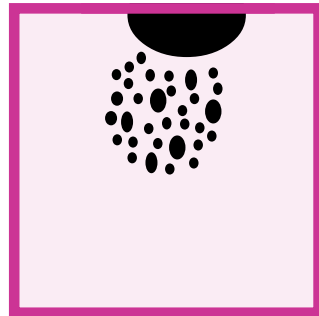
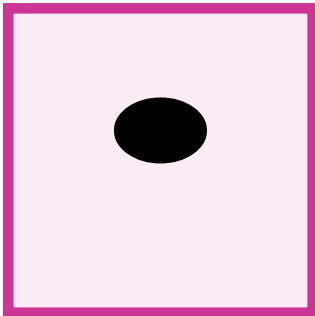
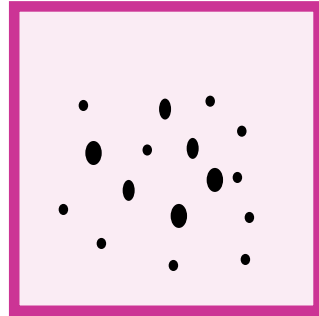
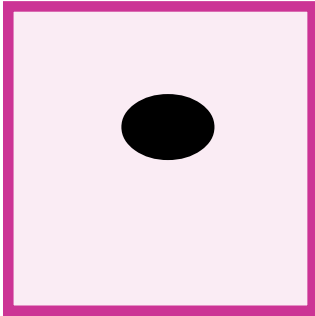
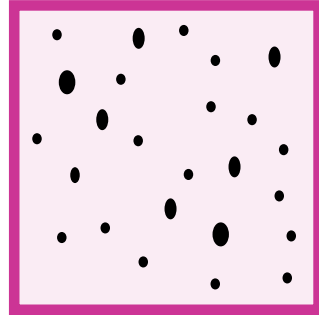
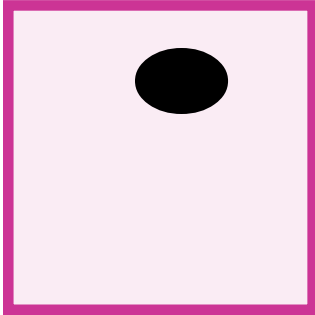
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WHAT'S THE STORY HERE? 2



NOVEMBER: Diabetes

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How Do You Catch It?

Overview and Objectives:

AIDS is a communicable disease that is not easily passed from one person to the next. Using a graphic organizer to guide their thinking, students identify similarities and important differences between AIDS and most communicable diseases.

Thinking Processes:

Skills: comparing and contrasting (determining similarities and differences between two ideas)

Attitudes: interest in developing insight and understanding

Heads-On! (Thinking Actively):

1. Ask students what is meant by a communicable disease and to give examples.

Ask students if AIDS fits the definition of a communicable disease.
(Yes, but AIDS is not easily passed from one person to the next.)

Explain that understanding the similarities and differences between AIDS and most communicable diseases can clear up confusions people have about AIDS and help them to make judgments that will prevent the spread of the disease .

2. Organize students in small groups. Give them the graphic organizer, "Open Compare and Contrast."

3. First, they brainstorm for common communicable diseases such as flu, colds, chicken pox, measles, etc. Then they select one of these to compare with AIDS.

They write their responses to these questions on the graphic organizer:

- In what ways is the disease they selected similar to AIDS?
- How are these two diseases different?
- What similarities and differences seem significant?
- What interpretations or conclusions are suggested by the significant similarities and differences?

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4. Students exchange graphic organizers to facilitate further thinking about comparisons between AIDS and other communicable diseases.

Making Connections (applying & integrating learning):

- Students can create posters for their school that show comparisons between AIDS and other communicable diseases.
- Through role-play and pantomime, they can illustrate comparisons between AIDS and other communicable diseases.

More to Discover & Think About...

- What is the origin of AIDS and what important things can be learned from this?
- Globally, where is AIDS the most prevalent and why?

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OPEN COMPARE AND CONTRAST

Two empty boxes at the top.

↓

HOW ALIKE?

Large empty box for notes.

↓

HOW DIFFERENT?

with regard to

Five empty boxes with double-headed arrows between them.

↓

CONCLUSION OR INTERPRETATION

Large empty box for conclusion.

DECEMBER: AIDS & Feline Leukemia

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AIDS Hot Line Show!

Overview and Objectives:

Education plays a crucial role in enabling young people to make behavioral judgments that will protect them from AIDS and inhibit the spread of the disease. In this simulation activity, students recognize fact vs myth about AIDS, raise questions about what is known, and think about what needs to be known.

Thinking Processes:

Skills: evaluation (assessing the accuracy of information)

Attitudes: objectivity; decisiveness (reaching conclusions when the evidence warrants)

Heads-On! (Thinking Actively):

1. Use the overview of this activity to introduce it.

Explain that students will create an “AIDS Hotline” TV or radio show.

They can be AIDS hotline experts or telephone callers. There should be more callers than experts, however students can prepare for both and take turns playing different roles.

Divide students into small groups according to the roles they choose.

“Callers” prepare for the show by brainstorming for important questions about AIDS. This includes questions based on gossip or people’s fears.

2. Hotline experts answer caller questions about HIV and AIDS and “set the record straight” about fact vs. fiction. They need to know about these things:

- the origin and spread of HIV
- what is HIV ?
- what happens when the HIV virus gets into the body?
- how does HIV affect the immune system?
- how do people get HIV?
- who is at risk for HIV?
- what is the relationship between HIV and AIDS?
- what are the symptoms of HIV?
- what is the HIV antibody test?
- what treatments for HIV?

3. In preparation for the show, students think of ways to introduce it, how to arrange the room, simple props they can use, and possible commercials about AIDS.

4. Based on their simulation, students can prepare a handout for their school entitled “Facts vs Myths” about HIV and AIDS.

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Making Connections (applying & integrating learning):

- Students can explore global measures being taken to control and prevent the spread of AIDS.
- Students can evaluate contributions by the media to educate the public about AIDS.

More to Discover & Think About...

- comparisons between people and animals with HIV and AIDS
- contributions of The World Health Organization to the control and prevention of AIDS

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Look What Happened to the Tooth!

Overview and Objectives:

Science is problem solving. In this activity, the problem students are given is to demonstrate the effects of acid on tooth enamel. They design an experiment, and then observe and interpret the results.

Thinking Processes:

Skills: analysis (identifying the components of substances); observation (objectively describing what is seen)

Attitudes: questioning; probing; attentiveness

Heads-On! (Thinking Actively):

1. Divide students into groups of five.

Talk about science as a process of inquiry, problem solving and discovery.

Ask them what they know about the causes of tooth decay.

(e.g., plaque, and how it is formed; its role in converting sugar into acid which penetrates the enamel of the teeth causing cavities and eventually damaging the soft tissue)

2. Present the following problem:

How can the effects of acid on tooth enamel be demonstrated using everyday materials? What experiments could you do to show this?

In their groups, ask students to think about the following:

- some common liquids that contain acid
- what is tooth enamel is made of and what materials could be substitutes for it
- the steps in an experiment in which these everyday materials can be used show the effects of acid on teeth over time
- methods for keeping track of these steps and what is observed

3. Each group develops an experiment, shares the results with the class afterwards, and discusses the following:

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materials used and conditions of the experiment • strategies for making careful observations • problems encountered and solved • problems encountered and not solved • results and interpretations

Making Connections (applying & integrating learning):

- How might students use these processes to solve other problems?
- Which thinking do students need to change to prevent tooth decay?

More to Discover & Think About...

- natural substances that can protect teeth from decay
- countries where tooth decay is a big problem or hardly exists

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My Life as a Tooth

Overview and Objectives:

From the point of view of a tooth, students tell what it would be like to have “good tooth” and “bad tooth” days. They create scenarios about dental health and act them out for one another.

Thinking Processes:

Skills: synthesis (gathering information and organizing it into a whole); originality (presenting information in unique ways)

Attitudes: seeking connections; intellectual risk-taking

Heads-On! (Thinking Actively):

1. The class brainstorms for ways to have healthy teeth and gums, and then for things that can happen to harm teeth and gums.

List their ideas. Elicit thinking about oral hygiene, nutrition, tooth decay, behaviors that interfere with good dental health, etc.

2. In small groups, with a partner, or individually, students have 5-10 minutes to act out ideas about a good or bad tooth day- from the point of view of a tooth!

Encourage students to think of unusual ways to act out their ideas! For example, they can do monologues, soliloquies, pantomimes, use humor, make video and audio tapes, and involve the class.

Making Connections (applying & integrating learning):

- Students can take pictures of one another's acts and create a class photo montage with these.
- Students can make “Okay!” and “Uh-Oh!” lists of good and bad things they did for their teeth in the course of a week.

More to Discover & Think About...

- different kinds of dentists and how they solve dental problems
- an invention to eliminate or prevent tooth decay

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What's the Big Idea?

Overview and Objectives:

Good dental health is important for people and animals. To illustrate ways to insure this, students create montages using pictures, drawings and photographs. They display their montages and try to guess the important or “big idea “ each one is conveying.

Thinking Processes:

Skills: generalizing (drawing conclusions about information)

Attitudes: wanting to understand the larger picture; getting beyond the concrete and the immediate

Heads-On! (Thinking Actively):

1. In pairs or alone, students choose an idea they want to express about how people and/or animals can have good dental health.
2. They find pictures to illustrate the idea, and create a montage with them by arranging them in a visually pleasing way on a page. Crayons, paints and other materials can also be used. (e.g., pictures, drawings and photographs of dogs and cats having their teeth cleaned and chewing on objects as ways to remove tartar from their teeth and prevent tooth and gum disease)
3. Students arrange the room like an art gallery. They enjoy looking at the different montages, and guess the “big idea” each one is conveying.

Making Connections (applying & integrating learning):

- Ask students what evidence there might be that a pet or an animal needs a dental check-up.
- Students can investigate which communities in their area fluoridate the water and the influence of this on dental health.

More to Discover & Think About...

- what teeth can tell us about how our ancestors lived
- why some older people and animals still have all of their teeth

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"Heart" Acts to Follow

Overview and Objectives:

Through body-kinesthetics, students show how different parts of the heart work interdependently to pump blood, and how changes in the output of the heart occur due to different physical and emotional circumstances.

Thinking Processes:

Skills: analysis (considering constituent parts and their relationship to the whole); originality (unique presentation of ideas)

Attitudes: careful consideration of information; playfulness; inventiveness

Heads-On! (Thinking Actively):

1. Divide students into groups of five. Give them 5 minutes to brainstorm and list things they know about how the heart works.

List ideas on the board. Show a diagram of the heart and relate what students have said to it.

2. Groups brainstorm for situations that can cause changes in how the heart works:

(e.g., vigorous exercise, worry, fear, eating a heavy meal, medication, drugs, a blocked artery, a heart attack, a relaxing experience, different kinds of music, dancing)

3. Together as a team, using their bodies, students demonstrate how a particular circumstance can affect how the heart works.

They need to think about how different parts of the heart respond and affect one another, clever ways to use their bodies to show this, and then practice putting it all together for their "heart act".

4. As each group performs its "heart act", the class guesses the situation that is being portrayed. Make a video-tape so students can see how effective they have been!

Making Connections (applying & integrating learning):

- Students can check their pulse rates in different situations and analyze what produces the changes.

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- Biofeedback and other stress reduction strategies can be explored.

More to Discover & Think About...

- pacemakers and their function
- ways to prevent heart disease in people and animals

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Making "Why-Why" Diagrams

Overview and Objectives:

Heart disease is a leading cause of death in the U.S. and other countries of the world as well. Students deepen their understanding of heart disease by asking and answering a succession of “why” questions about risk factors and their possible causes.

Thinking Processes:

Skills: causal reasoning (thinking carefully about factors that work together to bring about an effect)

Attitudes: interest in exploring farther and wider; striving for deeper insights

Heads-On! (Thinking Actively):

1. Divide students into pairs and give them a “Why-Why” diagram. In the large oval on the left, they write:

Heart Disease

2. Now they brainstorm for why so many people have heart disease?

(e.g. poor diet and nutrition, obesity, stress, genetics, lack of exercise)

Each of these is written in one of the large connecting ovals.

3. For each of these ovals, students ask more “why” questions and try to answer them: e.g., why do people have poor diets? why do they have weight problems, why don't they get more exercise

4. Students share “Why-Why” diagrams and continue asking questions about ideas in the smaller ovals.

Encourage students to probe more deeply about risk factors for heart disease and what causes them.

Facilitate recognition that there are often multiple causes of heart disease, not single causes, and how these come together to produce an effect.

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Making Connections (applying & integrating learning):

- Students can investigate the Framingham Heart Study and the causes of heart disease it has identified.
- Students can identify “non heart-smart” foods in the school lunch program that should be eliminated or improved.

More to Discover & Think About...

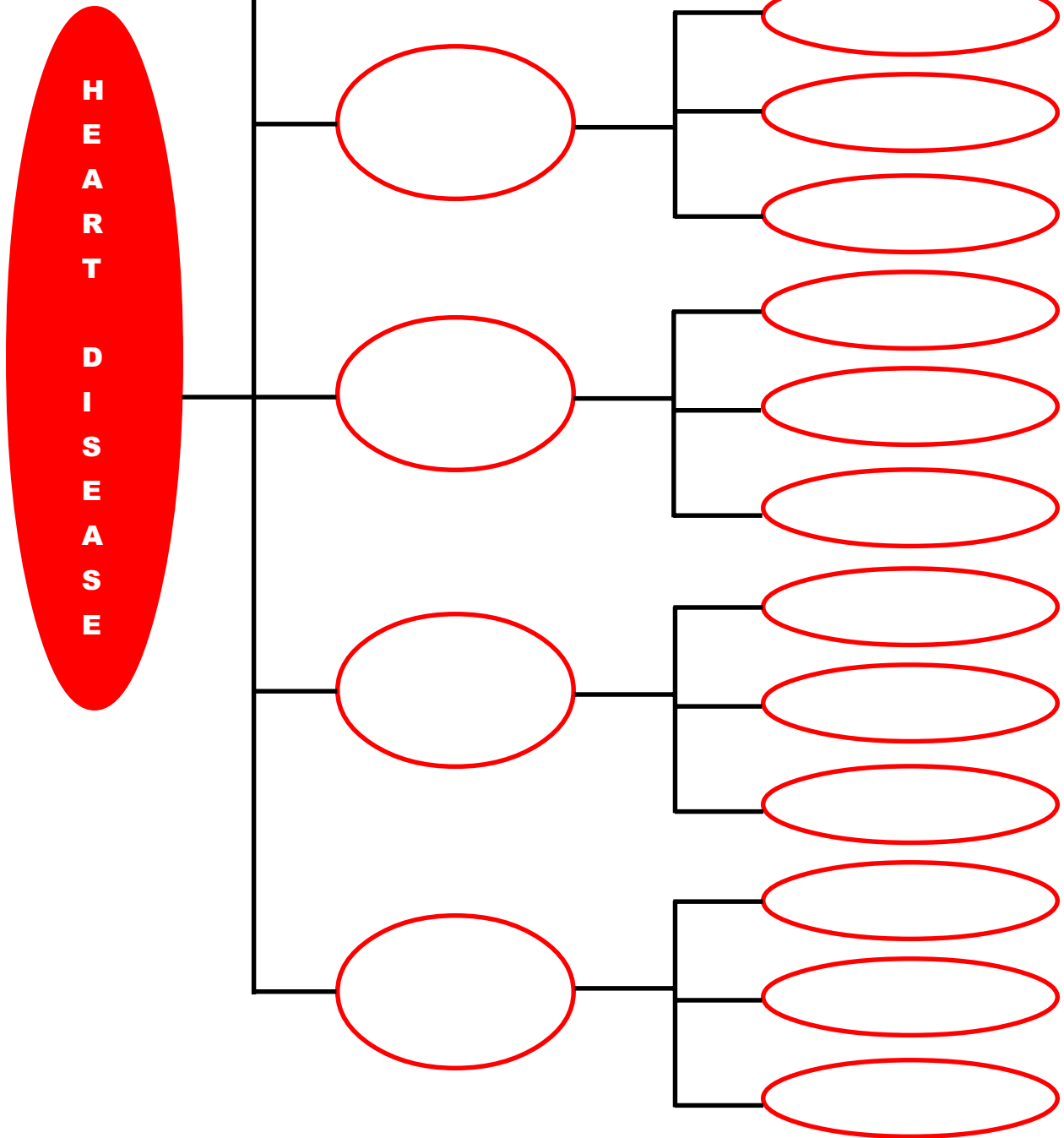
- countries with the *lowest* incidence of heart disease and factors that contribute to this
- genetic causes of heart disease in people and animals

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"Why-Why" Diagram



FEBRUARY: Heart Disease

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Becoming a "Mini-Max" Chef!

Overview and Objectives:

TV personality and gourmet chef Graham Kerr cooks the “mini- max” way. He minimizes or eliminates ingredients that can cause heart and other health problems, and substitutes healthy ones that maximize taste, flavor and appeal. Using this strategy, students convert favorite recipes into healthier versions and serve them up!

Thinking Processes:

Skills: analysis (identifying component parts; comparing and contrasting); flexibility; originality

Attitudes: considering possibilities; non-absolute thinking

Heads-On! (Thinking Actively):

1. Students can work with a partner or individually.

They choose a favorite recipe or food and list the attributes or general characteristics that make it appealing (e.g., crunchy, chewy texture, smell, aroma, sweetness).

2. Now they analyze this food for ingredients that may be unhealthy.

They can examine food labels and recipes and ask questions to people who prepare the food (e.g., pizza chefs).

(e.g., types of fats, oils and sugars used, amount of salt, artificial ingredients, and calories)

3. Using SCAMPER, students generate ideas for substitute ingredients to use to make their favorite foods more healthy without sacrificing taste and appeal factors.

(e.g., S (substitute) carob for chocolate; M (modify) amount of salt) They re-write the recipes and try them out (at home).

This a kind of experiment! Students should have flexible expectations and use results to understand what needs to be improved.)

4. Have a mini-max party! Students judge recipes for taste and appeal and compare ingredients to the originals: (e.g., salt, amounts, percentage of calories from fat; 9 calories = 1 gram fat)

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Making Connections (applying & integrating learning):

- Students can gather nutritional information about school lunches and make labels for various foods that are served.
- They can send their mini-max recipes to Graham Kerr and ask for his opinion about them.

More to Discover & Think About...

- what food manufacturers are doing to make supermarket products more healthy
- differences in health between vegetarians and meat eaters

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FEBRUARY: Heart Disease

S - C - A - M - P - E - R **A Technique for Producing Ideas**

<u>S</u>	Substitute?	who else, what else, other ingredients, materials, places
<u>C</u>	Combine?	how about a blend? combine units? combine purpose? combine appeals?
<u>A</u>	Adapt?	what else is like this? what other idea does this suggest?
<u>M</u>	Modify?	new twist? change meaning, color, motion, sound, odor, form, shape? what to add? more time? greater frequency? higher, longer, thicker?
	Minify?	subtract, divide, eliminate, shorten, simplify, etc.
	Magnify?	enlarge, multiply, add, increase, exaggerate, etc.
<u>P</u>	Put to other uses?	new ways to use as is? other uses if modified? other places to use?
<u>E</u>	Eliminate?	what to subtract? smaller? condensed? miniature? lower? shorter? lighter? omit? streamline? understate?
<u>R</u>	Rearrange?	interchange components?
	Reverse?	other patterns? other layout? other sequence? transpose cause and effect? transpose positive and negative? how about opposites? turn it backward? turn it upside down? reverse roles?

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Prevention Inventions

Overview and Objectives:

Using the cross-section of the house on the Calendar, students examine each room for products and plants that may lead to poisonings. Then they select an item and invent a way to prevent people or animals from being poisoned by it.

Thinking Processes:

Skills: originality (generating ideas that are unusual and effective)

Attitudes: inventiveness; taking a different view

Heads-On! (Thinking Actively):

1. Divide students into small groups.
2. Using the Poison Control Checklist, they identify situations in the cross-section of the house on the *People & Animals* calendar that could lead to poisonings. Ask them to also fill out the section on "the classroom."

Each person in the group can take a different section of the house, or the group can examine each area together.

3. Each group chooses one product or item in the house, and invents a way to protect people and/or animals from being poisoned by it. They think about what might happen. Who might be affected? How might this occur? How might these problems be prevented?

To facilitate their inventive thinking, students can think about:

- other ideas we could copy that would help?
- new "twists"? (e.g., color changes, motion, sound, odor, form, shape?)
- things to add? subtract? make longer? thicker? smaller?
- other materials that could be used?
- turning something upside down? backwards? inside out?
- reversing something?
- exaggerating something?

4. Students write up the plans for their "prevention inventions" and include drawings if they choose. They share ideas, suggest further improvements, and can really make their invention and test it out!

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Making Connections (applying & integrating learning):

- Invite an inventor to class to talk about the process of invention.
- Students can speculate on inventions that could have prevented problems during a particular time in history.

More to Discover & Think About...

- new ideas in package designs to prevent poisoning
- non-poisonous household cleaning products

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Product Safety Think Tank

Overview and Objectives:

In this awareness activity, students imagine themselves to be scientists holding a “think tank” session to raise questions about product safety. Questions are generated about specific ingredients and how they might affect people, animals, and the environment.

Thinking Processes:

Skills: deduction (to reason out or conclude from known facts or general principles)

Attitudes: considering possibilities; questioning and challenging assumptions

Heads-On! (Thinking Actively):

1. Each student brings a product from home such as cosmetics, household cleaners, glues, toys, packaged foods, etc.

2. Divide students into teams of five. Give each one several products.

Ask them to imagine that they are scientists having a “think tank” meeting to raise questions about the safety of each product for people, animals and the environment.

Think hard about each of your, from how they are packaged, to what’s in them. Make a checklist of questions to ask about possible effects of this product on people, animals and the environment.

3. Think tank teams write their questions on the board.

Encourage spin-off question raising. For example, questions might be raised about how a product could be misused, and the implications of this for safety testing.

Making Connections (applying & integrating learning):

- What stories about product safety testing are making news? Ask students to research this.
- Students can examine label information on imported products and raise questions about their safety.

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More to Discover & Think About...

- recent improvements in product labeling
- environmental safety measures in school buildings

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Product Safety Testing: What Do People Know?

Overview and Objectives:

Students conduct a survey to find out what people know about product safety testing. They identify major survey themes, and reflect on misconceptions people have and areas in which they may lack information. (activity adapted from "Thinking Critically and Creatively About Biomedical Science", from the MSMR curriculum, People and Animals United for Health.)

Thinking Processes:

Skills: collecting data; identifying major themes

Attitudes: being systematic; interest in the larger picture

Heads-On! (Thinking Actively):

1. Organize students in survey teams of five. Each team surveys 5 different people (e.g., parents, teachers, friends).

They ask a total of five questions from the following list, or make up questions of their own.

- What is product safety testing?
- Why is product safety testing conducted?
- How is product safety testing conducted?
- Should safety testing apply to products for animals?
- What do you know about the use of animals in product safety testing?
- How much personal and environmental risk will you accept in using different products?

2. Teams put their survey information on a chart or matrix.

They examine it for trends or patterns in what people say, and label these: for example, "People Need More Information About Product Safety Testing"; "Misunderstandings About Product Safety Testing."

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3. Teams share key themes. These ideas can also be discussed:

- animal testing is conducted only when data from other sources is inadequate to judge the safety of a product
- non-animal testing models are utilized whenever possible
- people and animals need each another; product safety for both is very important

Making Connections (applying & integrating learning):

- Simple procedures for analyzing data , such as finding the mean or average, and frequency distribution, can be introduced.
- Students can investigate product safety standards used in other countries and compare them to the U.S.

More to Discover & Think About...

- the care and protection of animals used in research
- product safety discoveries that benefit people and animals

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People and Animals Alike!

Overview and Objectives:

Students expand their understanding of ways in which people and animals are alike using morphological analysis. A matrix is created by listing the attributes of people and animals and then combining them. These combinations become the basis for considering more possibilities for similarities between people and animals.

Thinking Processes:

Skills: fluency, flexibility; originality; elaboration

Attitudes: openness to new ideas; making unique connections

Heads-On! (Thinking Actively):

1. Make groups of five and give each one a blank matrix.
2. Each group brainstorms a list of attributes (characteristics) that are shared by people and animals.
e.g., they get diseases, like to be with others, can think, communicate, feel happy, sad, need exercise, rest, sleep, etc.
3. They choose 5 attributes and write them in the spaces along the top of the matrix, and write 5 attributes in the spaces along the side. (a total of ten different attributes)
4. They combine items from across the top of the matrix with the items along the side.
Each of these combinations is a basis for stimulating new thinking about similarities between people and animals. Students look for connections, and elaborate on them. They write their ideas in the appropriate cells on their matrix.
For example, combining “can communicate” and “feel happy” might suggest such similarities as, “both people and animals can make sounds and use their bodies to express happy feelings”.
5. Students share interesting ideas from their matrices and think more about their implications.

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Making Connections (applying & integrating learning):

- Students can express similarities between people and animals in unique ways. For example, they might create cartoons and analyze existing ones such as “Garfield.”
- Charts can be created to compare the behavior of higher order animals like apes and monkeys with people.

More to Discover & Think About...

- animal “moods” and their origins
- case studies about people raised from infancy by animals

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Attributes Shared by People and Animals

People & Animals Alike!	1.	2.	3.	4.	5.
1.					
2.					
3.					
4.					
5.					

APRIL: Biodiversity & the Environment

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"Camelot" Stories

Overview and Objectives:

Through creative writing, students express the meaning of biodiversity. They create “Camelot” stories, or idealized situations, about unhampered interdependence among life forms on the earth. The differences between their stories and actual situations in which biodiversity is threatened are compared.

Thinking Processes:

Skills: comparing and contrasting (discerning differences between objects and events)

Attitudes: interest in gaining insight and understanding

Heads-On! (Thinking Actively):

1. Discuss the meaning of biodiversity. In small groups, ask students to brainstorm for what they know about this.

Create a web on the board with their responses.

2. Define diversity and interdependence.

(e.g., diversity: variety; interdependence: reliance on one another)

Ask students to define biodiversity and to give examples. (e.g., the diversity and interdependence of life forms: plants, animals, people, microorganisms as in a desert, rain forest, the ocean, woods)

Ask for their ideas about why biodiversity is important. (e.g., ecosystems need to be maintained for life forms to survive)

Ask for some examples of ecosystems. (e.g., a habitat and its community: desert; rain forest; ocean; woods)

3. Individually, or with a partner, students write creative stories about ideal ecosystems.

Their “Camelot” stories will be about idealized situations in which the interdependence among life forms in this ecosystem is undisturbed. Everything in it survives in a perfect way!

Encourage imaginative story writing and drawings about how animals, plants, people, insects, fish, help one another to survive.

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4. Students can read their “Camelot” stories to one another.

Afterwards, in small groups, students compare their “Camelot” stories with actual situations they know about in which ecosystems are being threatened, in this country and in other places in the world.

Their discussions can focus on these questions:

What are the differences? • Why do they exist? • What patterns do you see among the differences? • What interpretations are suggested by these differences?

Making Connections (applying & integrating learning):

- Students can brainstorm for ways to help protect ecosystems.
- Students can create “mini” ecosystems, observe and compare them.

More to Discover & Think About...

- countries of the world working together to protect ecosystems
- global strategies to prevent the endangering of plants and animals

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Special People Awards

Overview and Objectives:

Having positive self regard greatly contributes to sound mental health. Students interview each other about their special attributes, and then present awards to one another based on these.

Thinking Processes:

Skills: synthesis (putting parts together to form a whole)

Attitudes: desire to perceive relationships and meaning

Heads-On! (Thinking Actively):

1. Ask students to give examples of complimentary things that are said to them and they say to others. Ask how this makes them and others feel and why.

Elicit their thoughts about why it is important to feel good about ourselves, to respect ourselves, to be self-confident, to recognize our special qualities.

2. Ask students to give examples of *bothersome* things that have been said to them or to others. How did this make them feel and why?

3. Point out that everyone in the class has special qualities, characteristics, physical attributes, and beliefs that make unique individuals.

Ask what it would be like if everyone were the same.

4. Divide students into pairs.

Ask them to take turns interviewing each other about qualities (attributes) they think make them special and unique, and to list these: for example, ideas, talents, strengths, physical characteristics, how they prefer to treat others and why, etc.

5. From the interview information, each student creates a "Special Person Award" for their partner.

They decide which information about the person to include in the award and how they want to present it. For example, they might want to write a poem, or create a song, or make a drawing.

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6. Have a “Special People” awards ceremony. Each person gives and receives an award. Afterwards, ask students to comment on interesting things they learned about their partner.

Making Connections (applying & integrating learning):

- Using just color and/or simple drawings, students can convey their interpretations of human attributes (e.g., imaginative, compassionate, friendly, sensitive, etc.).
- Students can identify elements of body language people use to communicate their feelings and emotions.

More to Discover & Think About...

- the Nobel Prize and other famous awards and why they are given
- parts of the brain that have to do with feelings and emotions

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Kids Reaching Kids!

Overview and Objectives:

The media can be a powerful vehicle for influencing the way kids think about drugs, alcohol and tobacco. Using the part-changing method of creative problem solving, students create advertising messages designed to specifically reach young people about the effects of substance abuse.

Thinking Processes:

Skills: synthesis (combining ideas or parts into a unified whole or totality)

Attitudes: openness to possibility; seeking cohesiveness

Heads-On! (Thinking Actively):

1. In small groups, ask students to discuss examples of advertising they have seen or heard (e.g., TV, radio, newspapers, magazines, billboards) that they think gets a message across very effectively.

What are the specific attributes or features of that advertising that make you pay attention to it, remember it, learn from it?

Ask students to make a list of these attributes. (e.g., non-verbal or without words, artistic, musical, dramatic, very colorful, features a well-known person, unusual setting, unusual point of view, humor, etc.)

2. Each group shares examples of effective advertising and attributes they have identified. List these attributes on the board.

3. Young people can learn a lot about drugs, alcohol and tobacco from TV, radio and other media sources.

What important ideas about drugs, alcohol and tobacco can be communicated to kids through the media?

In groups, ask students to make a list of important ideas and facts kids need to have about drugs, alcohol, and tobacco.

The *People & Animals* calendar and fact sheets included in the supplementary information section of the teacher's guide will be helpful.

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4. Direct students' attention to the attribute list on the board.

How could you use these attributes to create advertisements about substance abuse that kids would pay attention to, remember, and learn from?

In your groups, develop an idea for an effective advertisement about substance abuse using information you have gathered. It can be for TV, radio, billboards, magazines, etc.

Use the part-changing method to suggest ideas for communicating your information effectively. Give each group the handout for this, and review the following procedure with them.

- Choose 5 attributes of effective advertising.
- Write an attribute at the top of each column.
- List several examples in the columns for each attribute. For example, for “musical” you could list rap song, jingle, duet, instruments, singing, whistling, etc.
- Combine examples from each of the five attribute columns. Many possibilities for creating effective advertisements will be suggested when you do this.

5. Students develop an idea for an advertisement suggested by the part-changing method they used.

They share these with one another, clarifying what makes each one effective: why kids will pay attention, learn from and remember it.

Making Connections (applying & integrating learning):

- Students can identify and discuss elements of ineffective advertising about substance abuse.
- Invite a media specialist to talk with students about strategies used to influence the way people think about different issues.

More to Discover & Think About...

- the impact of anti-smoking ads
- substance abuse in other countries and media prevention strategies

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"Joint" Decisions

Overview and Objectives:

Peer pressure drives many young people to experiment with drugs. To stand up to this and make the right choices, they need to develop effective decision making skills. Students are given a hypothetical situation in which they use a decision making process to determine how to respond to pressure they are getting from a friend to smoke marijuana.

Thinking Processes:

Skills: decision making (considering the pros and cons of options; choosing which option is best in view of the consequences)

Attitudes: willingness to explore two sides of an issue and to alter thinking as a result

Heads-On! (Thinking Actively):

1. Students read the following scenario:

A friend tells you that he (she) has smoked marijuana and says:

"It was *awesome* , I really liked it, and I didn't even get sick or anything! Besides, everyone has to do it *at least once!* ... and nobody has to know about it! It's awesome to share joints with friends. Do it with me! I can get more and I know where to hide out to smoke. Come on. Trust me. I swear never to tell anyone .

2. Make small groups. Give them the graphic organizer, "Choosing."

- On a separate paper, students make a list of problems about what their friend told them. They choose one of these problems.
- They brainstorm possible options. (What can they do to solve this problem?) They list these options on their graphic organizer.
- Which option do they choose? They write it in the arrow on the organizer.
- What will be the pros and cons (consequences) of choosing this option? They write them on the organizer and discuss them.
- They decide if the choice they made is a good thing to do and why.

3. Each group shares their thinking processes. They also discuss these questions:

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What are the differences between this kind of thinking and making “snap” judgments?(consequences are being considered!)

What might happen if you made a snap or hasty judgment about your friend’s “invitation”?

Making Connections (applying & integrating learning):

- Students can read stories (fiction or non-fiction) about decision making involving substance drug abuse.
- They can make posters for their school about decision making skills kids need to have to cope with peer pressure to use drugs.

More to Discover & Think About...

- research on the effects of marijuana
- how animals respond to drugs and alcohol

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CHOOSING

OPTIONS What can I do?	
_____	_____
_____	_____
_____	_____
_____	_____

**YOUR
OPTION**

PRO	RESULTS What will happen?	CON
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**Think about
the pros and
cons.**

CHOICE Is this a good thing to do?

WHY?

MAY: Mental Health & Substance Abuse

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Chains of Events

Overview and Objectives:

Whether an individual abuses drugs and alcohol, or chooses not to, can be the result of many things happening in a particular way. Students construct ways in which events can occur, or are chained, that can lead to or prevent substance abuse.

Thinking Processes:

Skills: causal chaining (identifying factors related to an outcome and organizing them in a causal sequence)

Attitudes: openness to possibilities; recognizing complexities

Heads-On! (Thinking Actively):

1. What causes something to happen can be the result of many things that take place in a particular way.

For example, a person catches a cold because they were in contact with someone who had one. They sat next to this person at a meeting. They arrived late to the meeting and this was the only seat available. They got a phone call which made them late for the meeting.

By considering possibilities, one-by-one, in backwards order, we can see some of the reasons why the person caught a cold.

This is called a causal chain.

2. Ask students to see if they construct a causal chain of events in their own lives. Write these sequences on the board.

3. There are causal chains of events for people who abuse drugs and alcohol (and for those do not).

What is an example of a chain of events that might lead to person's using drugs? Help students construct an example:

For instance, they might begin with, "a person uses drugs to escape from problems". Then they think backwards from here, to what kinds of problems, what caused them, to causes of the causes, etc.

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3. With a partner, students construct their own causal chains about events that may lead to or prevent drug abuse. These “trigger” words may help to initiate their thinking:

lonely; friendly; peer pressure; opportunities; recognition; acceptance; self-esteem; friendly; positive; nervous; frustrated; scared; spiteful; supportive; outgoing; helpful; creative; happy; responsible; strong; content; thoughtful; sensitive; impatient; wise; honest; generous; family history; role-models; patient; considerate; caring

4. Students share their causal chains. Emphasize that there are many different ways in which experiences can be chained to produce an outcome, and the complex nature of what can causes an event.

Making Connections (applying & integrating learning):

- Students can develop causal chains to gain insight into bad habits they may have and how to eliminate them.
- Students can develop causal chains to illustrate the impact of drugs and alcohol on the body.

More to Discover & Think About...

- chain of events that have lead to increased use of drugs and alcohol in this country
- countries that legalize drugs

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The Parts Department

Overview and Objectives:

Each system in the human body is made up of a number of parts that work together in specialized ways. Using graphic organizers to guide their thinking, students identify individual parts and functions of different systems of the body, and the critical role they play in the maintaining of those systems.

Thinking Processes:

Skills: determining parts-whole relationships (recognizing the function of individual parts and their contribution to the whole)

Attitudes: striving for deeper understanding of relationships

Heads-On! (Thinking Actively):

1. Everything around us is made up of parts. Ask students for examples of this. (e.g., bicycles, houses, clothing, etc.)

2. Ask why it's important to know what parts make up something.

(Whole objects or systems are not simply collections of their parts. If the parts were combined in different ways, then something different would result. The special relationship between the parts and the whole that they comprise makes that object or system what it is.)

Emphasize that, just as all other things we know about consist of different parts with different functions, so does the body.

Each system in the body is made up of many different parts that contribute to making that system work the way it does.

People and animals have bodies that are made up of different systems.

Ask students to name some of these systems (e.g., circulatory, respiratory)

3. Make small groups and give them the graphic organizer. Each one chooses a system of the human or an animal body.

They find information about the parts of this system, and the function of each of these parts. Each person in the group take a different part

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Things for each person to think about are:

- What parts is the part made up of?
- What would happen to the whole system if these parts were missing?
- What are the specific functions of the parts?

The group answers the last question together. They describe how the operation of the entire system is a function of the interdependence of all of its parts.

Making Connections (applying & integrating learning):

- Students can make flow charts to illustrate what happens to an entire system of any kind when one part of its breaks down.
- Students can practice “diagnosing” which part(s) of a person or animal’s body aren’t functioning properly according to their symptoms.

More to Discover & Think About...

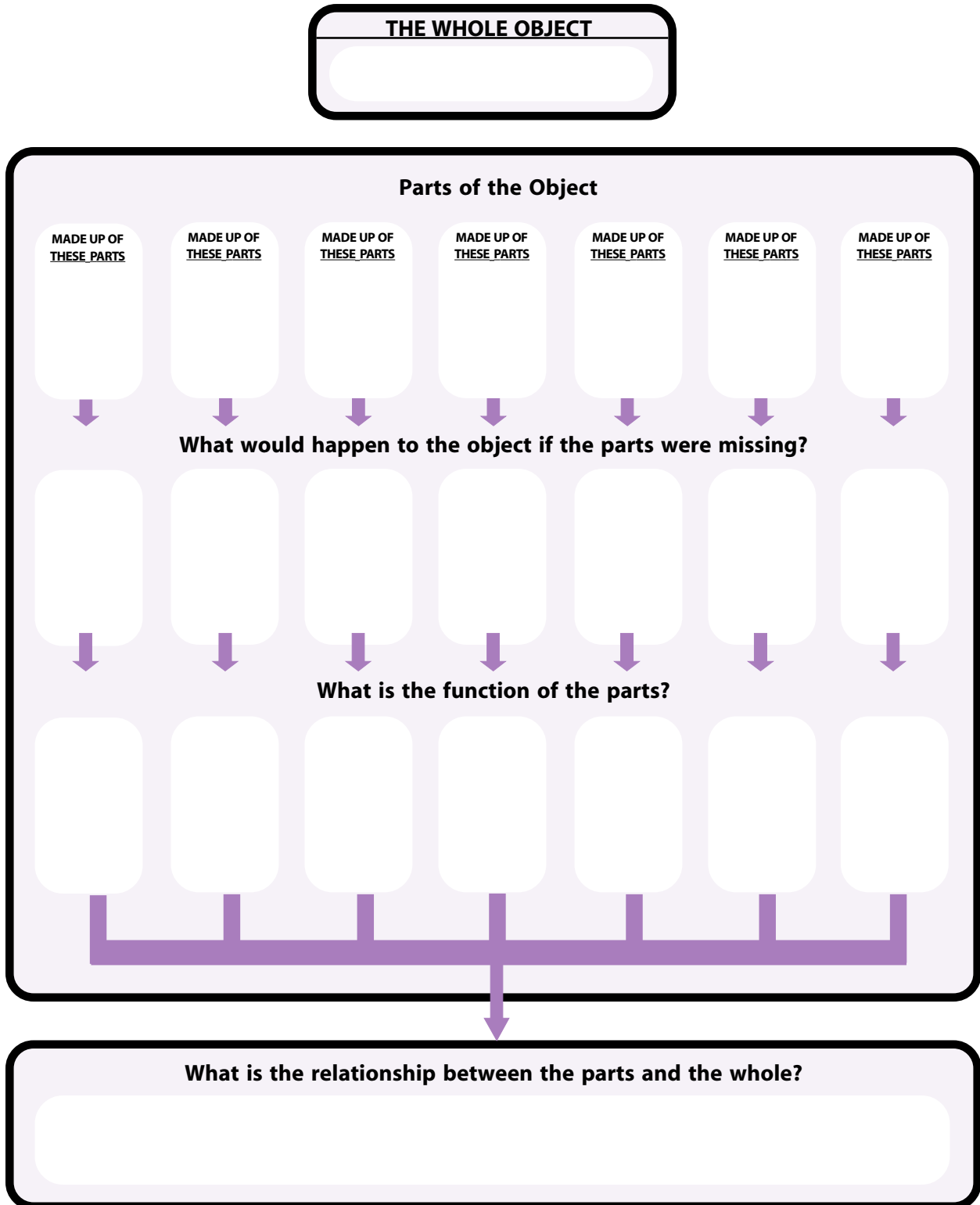
- parts of our bodies can we live without and why?
- organ transplantation or “parts substitutions” in people and animals

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Determining Parts-Whole Relationships



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The Spare Parts Department

Overview and Objectives:

By the year 2500, what kinds of organ transplants might be taking place? Assuming this would be a highly developed practice by then, what predictions would students make about parts of people's bodies that might need to be replaced and why?

Thinking Processes:

Skills: prediction (forecasting outcomes based on current knowledge)

Attitudes: recognizing the value of thinking ahead; openness to making thinking adjustments

Heads-On! (Thinking Actively):

1. Students brainstorm for things they know about organ transplantation.
Make a web of their responses on the board.
2. Ask students for reasons why people may need organ transplants.
e.g., lifestyle factors such as stress, disease, and unhealthy practices people engage in; environmental factors such as pollution, and use of pesticides
3. What is a prediction? Ask students to define this and to give examples.
4. In small groups, students brainstorm predictions for *health problems* people might have by the year 2500.
List these on chart paper.

5. Make small groups.

Based on their health problem predictions, now students brainstorm predictions for kinds of organ transplants that might be taking place by the year 2500.

List their predictions on the chart paper. Ask these questions:

Why might there be the health problems you predicted? In what ways might people, living, the environment, etc. be different by the year 2500?

Is there any current evidence that specific predictions you made about health problems and organ transplants by the year 2500 might be likely?

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Making Connections (applying & integrating learning):

- Students can graph current statistics about organ transplantation and make projected graphs for the year 2500.
- Introduce students to the “Futurist”, the magazine of the World Future Society. Ask them to find predictions about health in it .

More to Discover & Think About...

- biomedical research based on predictions
- longevity predictions for people with organ transplants

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It Takes Muscle to Show Feelings

Overview and Objectives:

It takes muscles for people and animals to communicate feelings with their voices, body language, and facial expressions. Students observe pictures showing people and animals with different expressions and make comparisons.

Thinking Processes:

Skills: observation (noting what is seen)

Attitudes: attentiveness; sustaining a focus

Heads-On! (Thinking Actively):

1. Give students “The Nature of A Smile and a Laugh” and get their reactions to it. (e.g., it takes muscles and a lot more to smile and to laugh)
2. Try this warm-up exercise. In pairs, students take turns observing each other’s facial muscles as you present each of these situations:
 - It’s time to go to bed.
 - It’s time to get up.
 - Here’s your birthday present.
 - You’ve just been scolded for not cleaning up your room.
 - You are having your least favorite food for dinner.
 - You won a trip to Disneyland.

It takes muscles to smile - at least 15; 43 to frown, and more than 200 to take one step!

3. Ask students to find pictures that show people and animals with different expressions.

In small groups, they study and then categorize pictures according to kinds of expressions. (e.g., joy, excitement, surprise, anger, sorrow)

For each category, ask students to observe specific ways in which people and animals in the pictures are using facial muscles and body postures to communicate feelings.

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4. Students share their observations and discuss similarities between people and animals. Encourage further elaboration through their experiences with pets and other animals.

Making Connections (applying & integrating learning):

- Students can read well known stories about ways people and animals communicate with one another.
- They can conduct an experiment with a pet to observe muscular responses to different things that are said, similar to the exercise they did with partners.

More to Discover & Think About...

- feelings that animals in zoos communicate to visitors
- emotional problems animals have and their treatment

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The Nature of the Smile and the Laugh

From "The Nature of the Smile and the Laugh," by G.V.N. Dearborn (1900):

There occur in laughter and more or less in smiling, clonic spasms of the diaphragm in number ordinarily about eighteen perhaps, and contractions of most of the muscles of the face. The upper side of the mouth and its corners are drawn upwards. The upper eyelid is elevated as are also, to some extent, the brows, the skin over the glabella, and the upper lip, while the skin at the outer canthi of the eyes is characteristically puckered. The nostrils are moderately dilated and drawn upward, the tongue slightly extended, and the cheeks extended and drawn somewhat upward; in persons with the pinnal muscles largely developed, the pinnae tend to incline forward. The lower jaw vibrates or is somewhat withdrawn (doubtless to afford all possible air to the distending lungs), and the head, in extreme laughter, is thrown backwards; the trunk is straightened even to the beginning of bending backwards until (and this usually happens soon), the fatigue-pain in the diaphragm and accessory and abdominal muscles causes a marked proper flexion of the trunk for its relief. The whole arterial vascular system is dilated, with consequent blushing from the effect on the dermal capillaries of the face and neck, and at times the scalp and hands. From the same cause in the main the eyes often slightly bulge forward and the lachrymal gland becomes active, ordinarily to a degree, only to cause a "brightening" of the eyes, but often to such an extent that the tears overflow entirely their proper channels.

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What If People Had Animal "Sense?"

Overview and Objectives:

Through evolution, many animals possess extraordinary body designs and sensory capabilities that permit them to survive in the extreme range of habitats on earth. Students use these characteristics to create a hypothetical, "super adaptable" person.

Thinking Processes:

Skills: hypothesizing (making suppositions)

Attitudes: willingness to consider unusual ideas and to make assumptions

Heads-On! (Thinking Actively):

1. In small groups, students brainstorm for examples of extraordinary body designs and sensory capabilities some animals have that allow them to survive in difficult conditions on earth.

(e.g., bats can "see" in the dark by feeling the bouncing echoes of their ultrasonic squeaks; eagles can spot prey on the ground from a distance of 2 miles)

Allow additional time for students to collect more information to add to what they have.

2. Propose the following to students:

What if people had some of these body designs and sensory capabilities?

In your groups, design a "super adaptable" person based on special adaptation features you "borrow" from animals and other life forms:

- What features do you want to borrow and why?
- What hypotheses do you have about how this person's life would be changed or different from what it would normally be?
- Give an example of problems your SP could solve, that a normal person could not.
- What contributions could your SP make to preserving and improving the environment?

3. Students will enjoy sharing their SP ideas and how they answered the questions!

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Making Connections (applying & integrating learning):

- Students can research inventions that have been inspired by adaptive capabilities of animals.
- Through literature, students can read about people who have been able to adapt to extraordinary circumstances.

More to Discover & Think About...

- animals whose adaptive capabilities are similar to people
- extreme environmental conditions in different parts of the world and how people and animals adapt and survive in them

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Making Sense Out of Things

Overview and Objectives:

The five senses play a vital role in helping people and animals survive and adapt to their environments. Students design experiments to explore the function of the senses, how they operate independently, and in conjunction with one another.

Thinking Processes:

Skills: generating possibilities (producing many ideas; producing varied ideas)

Attitudes: interest in exploring farther and wider

Heads-On! (Thinking Actively):

1. Ask students what they know about the five senses. List their ideas.

Elicit ideas about how the brain and the senses work together. (e.g., The eyes pick up impressions from the outside world and send messages to the brain for interpretation.)

2. To “gear up” their senses, ask students to close their eyes and to imagine the following.

Raise their hand when they experience these:

- imagine the taste of peanut butter
- imagine the smell of pizza
- imagine the feel of swinging high on a swing
- imagine the sound of a police siren
- imagine the taste of a pizza turning into an orange

Ask how they were able to imagine these things like they were really happening! (Our *brain* remembers past sensory experiences.)

3. Divide students into small groups and/or pairs.

Ask them to think of ideas for *simple* experiments that can take place in the classroom, to show how our senses work alone and together.

They begin by brainstorming for interesting questions. For example:

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- Is taste linked more to sight or smell?
- Can you feel the differences between things by tasting only?
- What things might interfere with being able to hear well?
- What things would two people see when taking a walk?
- What has age got to do with how well someone hears?
- Do some odors travel faster (reach people faster) than others?
- Using touch only, can people recognize certain objects?

4. Each groups performs their experiments, asks the class to tell what they learned, and raise new questions about things to find out.

Making Connections (applying & integrating learning):

- Students can develop hypotheses about what people might and might not be able to do if one of their senses is impaired.
- Challenge students to solve a problem using a sense they might not ordinarily use to do so.

More to Discover & Think About...

- stories about people who have overcome major sensory losses
- aids and devices for helping people with sensory losses

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Nutritional "Know-How"

Overview and Objectives:

What do students know about nutrition? Using a cooperative learning strategy called “three step interview”, and a questionnaire, students share information they have with one another. Then, using a “bottom-up” classification process, they categorize information, and review it for what is known and what needs to be known.

Thinking Processes:

Skills: “bottom-up” classification (classifying items by their characteristics and noting the categories defined by this)

Attitudes: being analytical; seeking insight

Heads-On! (Thinking Actively):

1. Nutrition plays a major role in keeping us healthy and preventing and treating many diseases.

Good nutrition is the body’s best defense. We need to be well informed about nutrition and develop good nutritional habits.

2. Divide students into groups of four.

Explain that students will gather information about nutrition from one another in a fun way called “three-step” interview:

Step 1: Students are in pairs; one is the interviewer, the other the interviewee. Using the questionnaire, the interviewer asks six questions about nutrition. The other person offers any information they have about each one, or says “pass” if they have none.

Step 2: Students reverse roles and repeat Step 1.

Step 3: The whole group organizes the interview information:

Similar information is grouped. (e.g., washing hands before eating, refrigerating foods, using bleach to clean cutting boards)

A title is given to each group or category of information. (e.g., “Ways to Prevent Food Contamination”)

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3. Teams share their classification results. Areas of common knowledge, those in which knowledge is lacking, and misconceptions and misunderstandings about nutrition are identified and discussed.

Making Connections (applying & integrating learning):

- Students can interview their parents, classify their responses and compare them with their own.
- Students can classify types and quantities of foods at home.

More to Discover & Think About...

- The Center for Science in the Public Interest (CSPI)
- public awareness about nutrition and nutritional practices

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Nutritional "Know-How" Questionnaire

1. What is the food pyramid and how is it arranged?

2. What do you know about how to read food labels?

3. What do you know about ingredients that make foods unhealthy?

4. What do you know about how to prevent food from being contaminated bacteria?

5. What do you know about differences between foods for cats and dogs and foods for people?

6. What do you know about processed foods?

AUGUST: Nutrition

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New Restaurant in Town!

Overview and Objectives:

What's on the menu?! Students have fun imagining they are going to open a restaurant that specializes in de-licious, healthy foods! Using a thinking technique called "forced connections", they create a menu of delectable, nutritious food choices prepared in unique ways.

Thinking Processes:

Skills: generating possibilities (fluency, flexibility, originality, elaboration)

Attitudes: risk-taking, playfulness, inventiveness

Heads-On! (Thinking Actively):

1. The average American diet is not as healthy as it needs to be.

Ask students what this means to them.

(e.g., kinds of foods people eat and the ways they are prepared: high in saturated fats, contain excessive salt and sugar, not enough fiber and fruit and vegetables, many fried and processed foods, "chemicalized" foods, the evidence from diet-related diseases like heart disease, cancer, high blood pressure, etc.)

People need to eat healthy foods. They also need to discover that foods that are good for you also taste good!

2. Each group pretends they are going to open a new restaurant that specializes in healthy (awesome!) cooking.

Give them a "Forced Connections" matrix. This is a strategy for producing many original ideas. Explain the procedure:

- Brainstorm for 5 healthy ways to prepare food; write each one in a box across the top of the matrix.
 - Brainstorm for 5 types of healthy foods; write these on the vertical lines on the left side of the matrix.
 - Brainstorm for seasonings for foods; list these in the "spice rack".
 - Each box in the matrix represents the combination of two items on a particular line. Choose a seasoning from the spice rack to use and presto! - a menu idea! Look how many ideas can be produced using this matrix!
4. Each group plans a menu based on ideas from their matrix. Sharing will be a lot of fun!

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Students can share their most original ideas, their favorites, etc., and ideas for what they would name their restaurant!

Making Connections (applying & integrating learning):

- Students can make menu items and bring them to class to taste.
- They can suggest ideas for healthy school lunches and give them to the dietitians.

More to Discover & Think About...

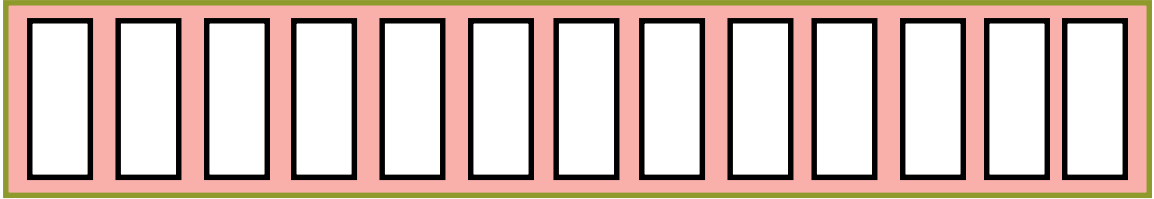
- diets of people in countries where heart disease and cancer is minimal
- unusual, delicious ways to prepare vegetables

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SPICE RACK



New Restaurant in Town! Menu Possibilities

Healthy Ways to Prepare Foods

Kinds of Healthy Foods	1.	2.	3.	4.	5.
1.					
2.					
3.					
4.					
5.					

AUGUST: Nutrition

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Trying New Foods

Overview and Objectives:

Young people are notoriously reluctant to try new foods. In this activity, students investigate their own food prejudices, first by trying foods after being told what they are, and then by tasting each food while blindfolded. Afterwards, they compare their reactions.

Thinking Processes:

Skills: evaluation (offering opinions based on personal interpretations)

Attitudes: fair-mindedness; willingness to alter impressions

Heads-On! (Thinking Actively):

1. Bring a number of unusual foods to class, e.g., foods from other countries, (canned, imported foods can be found in most supermarkets), foods from natural food stores, and different vegetarian foods.

2. Tell students the name of each food or show them the labels. Ask them to taste each food, and to write a brief summary of their judgment of that food.

Wearing blindfolds, students taste each food again and record their judgments, without identifying the food.

3. In small groups, ask students to discuss these questions:

- Would they have ordered any of these foods in a restaurant or tried them at home? Why or why not?
- Did they react more positively when they didn't know what they were tasting? Why or why not?
- What difference does being able to see the food make?
- Are they more likely now to try something new? Why or why not?

4. Each group summarizes and share their responses:

- What did they learn about how they judged the taste of new foods? (e.g., discuss bias and prejudice and how it interferes with making fair judgments.)

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- What ideas do they have about why many people their age may not like to try new foods?
- What ideas do they have about how to change this?

Making Connections (applying & integrating learning):

- Students can explore strong ideas people in many cultures have about which foods are acceptable and which are not.
- They can judge new foods using rating scales and graph the results.

More to Discover & Think About...

- myths and superstitions about foods
- stories about people who had to eat unusual foods to survive

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Teacher Tip

Include a note to parents a few days before the tasting of foods:

Dear Parent(s):

The class will be having a "fiber food tasting party" on
_____.

Please list any foods that your child might be allergic to or
should not eat.

_____ Signature

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