

PALS

Partners in Active Learning Support



STUDENT ACTIVITY HANDBOOK · VOLUME II



The FFA Mission

FFA makes a positive different in the lives of students by developing their potential for **premier leadership, personal growth and career success** through agricultural education.

The Agricultural Education Mission

Agricultural Education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

Produced by the National FFA Organization in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies. The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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Partners in Active Learning Support

STUDENT ACTIVITY HANDBOOK • VOLUME II

*This resource provides basic program information
and hands-on learning activities for local FFA chapters
that conduct PALS programs.*

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Partners in Active Learning Support

PALS HANDBOOK

Overview

Objectives

Benefits

Step by Step

FAQs

Team Tasks & Responsibilities

FFA Member Responsibilities

Skills for Cultural Diversity

Recruiting and Selecting PALS

Fundraising

Marketing

PALS OVERVIEW

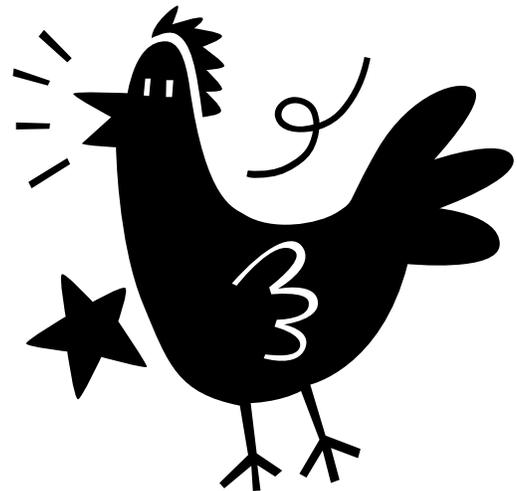
PALS is a mentoring program that matches high school agriculture students with elementary students to help them—

- get excited about school,
- explore their interests in plants and animals, and
- develop their personal skills.

Mentoring activities center around building trust and

developing positive self-esteem through sharing and working together in a one-to-one relationship.

The mentoring role is a major commitment on the part of the high school students. FFA members are selected to help build the human resource potential of a young child as well as themselves. They will receive training from high school and elementary counselors and agriculture teachers to prepare them for their mentoring role.



PALS OBJECTIVES AND BENEFITS

OBJECTIVES

- Improve social and leadership skills in elementary students and FFA members.
- Improve self-esteem in students as a result of the mentoring program.
- Develop the human resource potential of FFA members, elementary youth, teachers and administrators.
- Increase student understanding of the principles of human development.
- Increase student awareness of the needs of the local community.
- Create alliances between people of all ages who have similar goals and needs.
- Recognize local, state and national resources available for youth development programs.

BENEFITS

A three-year pilot study has shown that PALS is effective in achieving:

- Improved school performance and attendance for the little PALS and FFA member participants.
- Improved understanding of human development by FFA member participants.
- Improved self-esteem of little PALS.
- Increased involvement in school activities by all participants.
- Increased involvement in the FFA by students who traditionally have not been active members.
- Increased support from school administration for project activities.



PALS, STEP BY STEP

Follow these ten steps to get your PALS program started.

1. Organize your PALS committee.
2. Meet to determine your PALS mission statement.
3. Identify and train FFA members (big PALS).*
4. Work with elementary school teachers to identify little PALS.
5. Develop calendar of activities for PALS program.
6. Obtain resources necessary for activities.
7. Carefully plan and follow through with each activity.
8. Evaluate each activity.
9. Publicize your program.
10. Assess your program's success and provide opportunities for improvement.

*Additional training materials are available for purchase through the *Agricultural Education Resources* catalog published by the National FFA Organization.



PALS FAQs

How do we start a PALS program?

The first step in starting a local PALS program is to put together a committee of interested people. This committee may be comprised of teachers, counselors, principals, community members, parents, FFA members and others. They will work to set up the PALS program, develop resources for members to use, contact elementary teachers, help plan PALS lessons and assist the FFA advisor as needed. Many support materials are available through the *Agricultural Education Resources* catalog published by the National FFA Organization.

What is a mission statement?

Each FFA chapter should develop a mission statement for their PALS program. This mission statement should reflect the program goals and objectives. This statement helps students understand why they are working with the PALS program.

Who should be involved?

FFA members can become involved as a big PAL. The big PAL has responsibility for their relationship with the little PAL. FFA members may need to apply and be interviewed for a position in the mentoring program. Not everyone can be a PAL. Beginning programs may want to limit the number of FFA members involved to 5 or 10. FFA programs have had success working with elementary students of all ages, but kindergarten through third grade seems to be the best age range for many programs.

When should we meet?

It is recommended that your PALS program meet with the younger students once per week. Additional meetings of the FFA members will be needed to plan the lessons and gather supplies. If your group is unable to meet once a week, be sure to set up a schedule that is consistent. Little PALS look forward to visits from their big PALS!

Where will this happen?

In most cases, PALS activities take place at the elementary school during classtime. Some programs take the little PALS to the high school. Often, field trips and other group activities are also involved.

SAMPLE PALS MISSION STATEMENT

The Allentown FFA Chapter teaches students personal growth, leadership, agriculture and development through Partners in Active Learning Support (PALS).

“GLAD—Growth, Leadership, Agriculture, Development”

Team Tasks and Responsibilities

Use this form to assign responsibilities in your PALS program.

Task	Who's Responsible	Completion Date
Big PAL Recruitment		
Big PAL Selection		
Little PAL Selection		
Development of Student Manual		
Big PAL Training • What type; how many sessions		
Matching Big PALS/Little PALS		
Coordinating Calendars Between Schools		
Plan Activities/Projects		
Supervision of Big PALS/ Little PALS		
Family Involvement		
Community Resources • Financial • Support services • Transportation • Other		
Public Relations • Parents • Community • School • Media		
National Reports/Forms		
Other Tasks:		

FFA MEMBER RESPONSIBILITIES

- Be aware of the important impact all experiences may have on your little PAL. Become comfortable with the fact that the little PAL is different from you and may approach acting and behaving differently than you do.
- Be careful to respect the little PAL's opinions. Be aware of your own attitudes, beliefs and feelings and how these may affect your judgement.
- Help your little PAL accomplish tasks. Be sure that your helping style allows your little PAL to have a learning experience. Always remember that you are to **assist, not do** the task.
- Learn about your little PAL, but don't ask questions that are too personal. If a little PAL makes a habit of bringing you gifts or giving you personal notes, gently discourage this habit. Never respond back with a written note.
- Help your little PAL think about their behavior, thoughts and actions as they try new activities. Help them see the benefit of trying. Help the little PAL take risks in trying new behaviors, and give support when necessary.
- Be consistent with praise. Be clear, concise and direct. The little PAL should learn to respond to verbal rewards. No gifts should be given without specific permission of the advisor.
- Help the little PAL think of new ways to handle situations.
- Keep promises to your little PAL, such as showing up at an agreed time. Do not make promises you cannot keep.
- Plan activities with your teacher/advisor, cooperating elementary teachers, cooperating agency, other FFA members and the little PALS.
- Prepare for and complete the tasks you agree to do.
- Follow the rules of your school and of the elementary school while working with the little PAL.
- Contact your little PAL's teacher ahead of time and get permission if you will be eating lunch at the elementary school with your little PAL, taking them for a special activity or meeting with your little PAL at any other special time during the school day.
- Let your agriculture teacher and the little PAL's teacher know if you are going to be absent or cannot do the task you agreed to do. Make arrangements to do it another time.

SKILLS FOR CULTURAL DIVERSITY

PALS program participants need to be aware of cultural diversity and work to develop the skills necessary to be effective. These skills include:

- a self-awareness (of attitudes on multiculturalism; of your strengths and weaknesses in working with people from different cultural backgrounds);
- an ability to communicate effectively (written, verbal, non-verbal);
- an ability to challenge and stimulate children to learn and apply critical thinking skills;
- an ability to think critically, analytically and creatively;
- a sensitivity to individual differences;
- a positive attitude;
- a willingness to integrate a multicultural perspective into the classroom and curriculum;
- a willingness to build and strengthen bridges between home, school and community.

Types of Culture

An awareness of the different types of culture is helpful when working with students of diverse backgrounds.

Language/Communication

- The preferred manner of speaking
- Origins of the language and its elements
- Names of people and places
- Gesture or postures, e.g., welcome, hostility, approval/disapproval, affection/anger, courtesy/rudeness
- Current usage, colloquialisms, regionalisms
- Games and other forms of entertainment

Humanistic

- Forms of kindness, humor and validating oneself and others
- Concepts of justice, fairness, competition and cooperation
- Unselfishness, leadership
- Concepts of human capability and potential

Historical

- Persons from political, literary, artistic and scholarly arenas, etc.
- Events recorded and remembered
- Ancestral contributions evidenced in contemporary life
- Geography and its effects on ancestral group history
- Origins of surnames (last names)

SKILLS FOR CULTURAL DIVERSITY

Deep

- Family ties and relationships
- Friendships: e.g., gender, religious, physically challenged, urban/rural, etc.
- Pride and self-respect
- Dictates of conscience
- Milestones in personal life, e.g., birthdays, funerals, etc.

Formal

- Literary landmarks
- Contents of museums
- Music of ancestral group
- Art
- Dance
- Holidays and parades

Situational

- Inter- and intra-group relations
- Well-known contemporary personalities
- Social change awareness and recognition of change agents
- Physical similarities and differences and how these affect perceptions
- Diet: nutrition and the rituals that accompany it

Adapted from Josue M. Gonzalez, *A Developmental and Sociological Rationale for Culture Based Curricula and Cultural Context Teaching in the Early Instruction of Mexican American Children*



RECRUITING & SELECTING BIG PALS & LITTLE PALS

Sample Letter to Parents

PALS **Partners in Active Learning Support**

(Date)

Dear Parent:

The PALS program involves giving high school students a new role of responsibility—that of big PALS. In addition, the program establishes a new relationship between the high school PAL and an elementary school student (little PAL). For the little PAL, this is a special experience of having an older student listen to them and is similar to having a big brother or sister.

The selected high school PALS will begin on _____ (date). They will meet with elementary students at _____ (site), from _____ to _____ (time), on _____ (day or days). The big PALS and little PALS will be supervised at all times by the PALS Team Coordinator or other assigned team member. In the training, the students will learn various aspects about mentoring as well as how to improve their self-management skills.

Due to the importance of beginning a new program, we will need to use some personal information from their files such as grades and any referrals made, etc. We will not be using any student names on the information gathered for reports; but we do need to know how the student is progressing in his or her studies. Please do not hesitate to contact one of us or _____ (program coordinator) at _____ (phone), if you have any questions.

Sincerely,

ELEMENTARY PRINCIPAL
OR HIGH SCHOOL PRINCIPAL

ELEMENTARY TEACHER
OR AGRICULTURE TEACHER

ELEMENTARY COUNSELOR
OR HIGH SCHOOL COUNSELOR

Return This Section

I give permission for my son/daughter to participate in PALS at _____ (school's name). I also give permission for their personal file to be used to check the status of their academic progress during their PALS involvement. My son/daughter will participate as a big PAL/little PAL. I understand that big PALS and little PALS will be supervised at all times. In addition, I give permission for my child to be photographed and/or videotaped for news releases and other promotional activities for PALS.

Student's Name _____ Grade: _____

Parent's Signature _____ Date: _____

FUNDRAISING FOR YOUR PALS PROGRAM

The following questions will assist you in understanding the kinds of resources you may need for your PALS program.

- What kinds of services/support do we need for PALS? (financial, human, marketing, in-kind, materials for projects, etc.)
- How important is receiving these services/support to the success of PALS?
- What can we get from whom?

Recommendations: When selling/marketing your program, make sure you build it up. Take brochures, articles, newsletters—anything you have that describes your program and its capacity to make a positive difference in the life of a child and the impact it can have on the community as a whole. Think of how you can give back to your local community so you will not always be asking for assistance.



MARKETING YOUR PALS PROGRAM

Objective:

Position PALS as a new and exciting way of enhancing community support services.

Forms of promotion:

1. Send press releases and information packets to community affairs/public relations departments, news departments, columnists and producers of special features.
2. Position PALS as a newsworthy item. Prepare releases from a variety of perspectives, such as:
 - unique collaboration among a variety of agencies and businesses;
 - human interest focus on big PAL;
 - issue focus on ultimate goal of PALS; e.g., decreased school dropouts, prevention of substance abuse, career development, community enhancement, etc.;
 - the impact of a one-to-one relationship on big PALS (can be tied into national service, “points of light,” volunteerism angle).
3. Develop Public Service Announcements; work with your local television station to tie into a theme of existing media, e.g., volunteer connection.





Partners in Active Learning Support

ACTIVITIES

Agricultural Awareness
Agricultural Mechanics & Technology
Animal Science
Environmental Science
Food Science
Plant Science

People don't often think about where their food comes from. Help your little PAL learn about agricultural products with a "visit" to his or her lunch bag (or lunch tray).

■ Objective:

Student will identify agricultural products used to make today's lunch.

■ Outcomes:

Awareness of agricultural products; categorization and analysis of lunch items; spelling practice

■ Procedure:

1. Ask your little PAL what he or she had (or will have) for lunch today. Ask where the lunch came from. (You might get an answer like "the kitchen." Keep asking...where did the food come from before it was in the kitchen? Where did it come from before the grocery store?) Explain that food is an *agricultural product* that goes through various steps on its way to the lunch bag or cafeteria tray.
2. Talk about the term "*agricultural product*." Agricultural products are items grown or produced on farms, ranches, orchards, gardens, tree farms, fish farms, etc. It is easy to identify agricultural products (fruits and vegetables) found in the grocery store produce section. Agricultural products are also *processed* and used to make foods and other products.
3. With your PAL, list each food item he or she had for lunch today. List all the foods included with the lunch, even if your PAL did not eat them. Don't forget the beverage!
4. Next to each food item from your PAL's lunch, list all the agricultural products used to make it. Count how many different products are contained in a simple lunch.

Materials Needed:

- blank paper
- pen or pencil

Time Needed

About 10 minutes

Related Subjects:

Language arts (writing, spelling); mathematics (categorizing, counting); social studies (production, distribution and consumption)

Extensions:

- Analyze the content label on a package of your PAL's favorite food. Identify agricultural products used to make the packaged food.
- Read children's books about agricultural products and the foods in which they are found.

There is a bumper sticker that reads, "Farming is Everybody's Bread and Butter!" Use this phrase to spark your little PAL's interest in agriculture.

■ Objectives:

Student will consider agriculture's impact on his or her world and practice creative thinking skills.

■ Outcomes:

Agricultural awareness; word skills; creative thinking practice

■ Procedure:

1. Share the bumper sticker slogan with your little PAL. Ask what your PAL thinks it means. Explain what you believe it means.
2. Challenge your PAL to write all the words that can be made from the letters in the phrase, "farming is everybody's bread and butter." Here are the rules:
 - Use only letters that are in the phrase.
 - Do not use proper nouns, such as people and place names.
 - In each word, each letter from the phrase may be used only once. For example, the word "matter" is OK, because there are two Ts in the phrase. The word "toffee" is not OK, because there is only one F in the phrase.
3. Give your PAL time to work on his or her own, then offer some suggestions. There are more than 750 possible words! Work together to discover as many as possible within five or ten minutes.
4. Count the number of words listed. Use a highlighter to mark which ones relate to agriculture and agricultural products.

Materials Needed:

- blank paper
- pen or pencil
- highlighter

Time Needed

10-15 minutes

Related Subjects:

Language arts (vocabulary, spelling);
mathematics (counting)

Extensions:

- Talk about the impact agriculture has on our world and our economy beyond food production (clothing, building materials, scientific advances, etc.).
- With your PAL, make up other bumper sticker slogans that illustrate the impact of agriculture.

**Farming is Everybody's
Bread and Butter!**

The Fatima High School FFA Chapter, Missouri, takes PALS outside for some "agriculture spotting."

■ Objective:

Student will recognize products, tools, activities and locations related to agriculture.

■ Outcome:

Agricultural awareness

■ Procedure:

1. Obtain permission to take your little PAL outside, either right on the school grounds or, if possible, for a walk around the neighborhood.
2. Ask your PAL to tell you everything he or she can see that is part of agriculture. Stop and point out things you notice but your PAL overlooks. (Remember, agriculture includes landscaping, horticulture, gardening, fertilizers, natural resources, forestry, nurseries, lawn and garden stores and more!)
3. After your walk, go to the library with your PAL and find pictures of other products, tools, activities and locations related to agriculture. Have your PAL choose and read you a book about agriculture.

Materials Needed:

None

Time Needed

Approximately 30 to 45 minutes, including library time

Related Subjects:

Language arts (vocabulary, reading); science (organisms and their environments); social studies (people, places and environments)

Extension:

- Take your PAL on a field trip to a totally different environment (like a farm or ranch for urban students or an urban or suburban setting for rural students). Look for products, tools, activities and locations related to agriculture there.

Source: Suggested by Ashley Bauer, Fatima High School FFA Chapter, Missouri.

Have fun searching out agricultural products with your little PAL.

■ Objectives:

Student will identify agricultural products and become more aware of how agriculture impacts his or her daily life.

■ Outcomes:

Awareness of agricultural products; problem-solving skill practice; vocabulary expansion

■ Procedure:

1. Obtain permission to move around the school with your PAL and conduct the scavenger hunt.
2. Explain the scavenger hunt to your little PAL. Ask if he or she has ever been on a scavenger hunt before.
3. Review the list of agricultural products you and your PAL will try to collect. Make sure your PAL understands each word.
4. See how many listed items you and your PAL can find during your one-on-one session. Challenge your PAL to be creative about where to find items around the school (don't forget the cafeteria, library, administrative offices, etc.).
5. Assign your little PAL to bring the remaining scavenger hunt items to your next session.
6. Review all the items you and your PAL found. Talk about their connection to agriculture.

Materials Needed:

- list of scavenger hunt items

Time Needed:

Approximately 45 minutes, plus follow-up time

Related Subjects:

Language arts (vocabulary, library use); mathematics (classification/grouping)

Extensions:

- If your FFA chapter holds group PALS activities, set up the scavenger hunt by teams. Visit nearby homes, stores and businesses to find scavenger hunt items. (Contact the places you might visit in advance so they know what to expect. And, always make safety a priority.) Display the collected items on a bulletin board.
- Adapt the list of scavenger hunt items to reflect agricultural products created in your state.

Agricultural Scavenger Hunt Items

a meat byproduct	a news story about agriculture
a locally grown vegetable	a fruit grown in the state
something made from a tree	a poem or book about a horse
a picture of a modern farm machine	something sweet produced in the state
a package from a dairy product	an item made of leather
a magazine ad for flower arrangements	a grocery store ad selling a pork product
a recipe using eggs	a drop of vegetable oil
a product made from grain	a coupon for a pet-related item
a magazine article about poultry or fish	

Source: *This Business Called Agriculture* (Madison, Wis.: Wisconsin Agribusiness Foundation, 1999).

Explore the world of agricultural exports with your little PAL.

Objective:

Student will identify and locate countries that receive exported U.S. agricultural products.

Outcomes:

Agricultural awareness; word skills; map skills

Procedure:

1. Look in books or on-line to find the names of countries that receive large amounts of exported agricultural products from the United States. (If possible, concentrate on agricultural product exports that are produced in your state.)
2. Use the “code key” on this page to create a coded message about agricultural exports. (For example, you might write a sentence like, “Countries that receive our agricultural products are”) Create a worksheet that shows the message only in code.
3. Have your PAL use the code to spell out countries that receive agricultural products exported from the United States.
4. Look up the countries’ locations on a current map (or maps) of the world. Place removable stick-on notes on each country. Talk about how U.S. agriculture is part of the entire global society and economy.

Materials Needed:

- worksheet
- pencil
- large world map or world atlas
- removable stick-on notes

Time Needed:

Approximately 20 minutes

Related Subjects:

Social studies (production, distribution and consumption; global connections; people, places and environments)

Extension:

- With your PAL, research a list of other countries that receive U.S. agricultural exports.

CODE KEY

Use this code to create a “secret” message for your PAL to solve.

A - 7	J - 22	S - 9
B - 15	K - 5	T - 21
C - 12	L - 14	U - 13
D - 23	M - 18	V - 26
E - 4	N - 8	W - 3
F - 19	O - 2	X - 17
G - 1	P - 25	Y - 6
H - 24	Q - 20	Z - 16
I - 10	R - 11	

4	26	4	11	6	15	2	23	6	
8	4	4	23	9	7	25	7	14	!

Source: *This Business Called Agriculture* (Madison, Wis.:Wisconsin Agribusiness Foundation, 1999).

Help your little PAL investigate an interesting agricultural product on the World Wide Web.

■ Objectives:

Student will access the World Wide Web and seek information about an agricultural product, then report results to classmates.

■ Outcomes:

Computer, research, writing and speaking skills practice

■ Procedure:

1. Ask your little PAL to list all the agriculture-related products and items he or she can name. Prompt your PAL to include animals, plants, products, technology, machinery and structures on the list.
2. Have your PAL choose one item (or group of related items) from the list that really interests him or her. Find out why your PAL is so interested.
3. Help your PAL sign on to the World Wide Web. Conduct a search for the targeted word. Check out web sites that provide related information for children. (A few are listed in the resources section on page 83. You might want to find other appropriate sites before signing on with your little PAL.)
4. Challenge your PAL to find answers to the questions listed under “Discussion Points” on this page.
5. Help your PAL prepare and practice a one- or two-minute speech about the researched agriculture-related item. Set up a time for your PAL to give the speech in class.

Materials Needed:

- computer with Internet access
- blank paper and pencil (for taking notes)

Time Needed:

Approximately 30 minutes

Safety Precautions:

Be sure to review rules about on-line security with your little PAL (they should never give out their name or address). Check web sites ahead of time so your PAL is not exposed to inappropriate material. Supervise when your PAL is on the Web, and immediately exit any sites that are inappropriate.

Related Subjects:

Language arts (research, writing, speaking); technology

DISCUSSION POINTS

Challenge your little PAL to uncover answers to the following questions about the agriculture-related animal, plant, product, technology, machinery or structure he or she researches on the World Wide Web.

- What does it look like?
- What is its proper name?
- What does it sound like?
- What does it do?
- How is it cared for?
- Why is it important to agriculture?
- Why is it important to everyone?
- How could your PAL learn more about it?

Review your little PAL's expanded agricultural vocabulary with this fun exercise.

Objectives:

Student will match scrambled words to correctly spelled words and define each.

Outcomes:

Vocabulary expansion

Procedure:

1. Use a copier or scanner to enlarge the box on this page into a worksheet for your PAL. (Or, make up your own version with words that relate to your PALS activities.)
2. Have your PAL match the scrambled words in the left column to the correctly spelled versions in the right column.
3. Ask your PAL to tell you what each word means. Talk about past PALS activities, books and trips that relate to the listed words.

Materials Needed:

- worksheet
- pencil

Time Needed:

15 minutes

Related Subjects:

Language arts

Extensions:

- Challenge your PAL to write a short story using some of the unscrambled words.

Word Scramble

Match up the scrambled words in the left column with the correctly spelled versions in the right column

nmradfal	seeds
etahwre	animals
aatlnru cursoeesr	crops
smainla	barnyard
dofo snrpogseci	weather
eedss	planting
niinevaterra	farmland
rnadaybr	grain elevator
tgeeevlbas	fruit
nrkia lverotea	natural resources
rpcos	tractor
vtahrse	vegetables
ttreaor	veterinarian
ntlgapni	food processing
utfir	harvest

Source: <http://www.agr.state.il.us/kidspage/scramble.html>

“Dig into” a popular food to give your PAL a good overview of agriculture.

■ Objectives:

Student will investigate components of a bacon cheeseburger and research information related to the agricultural products that compose each.

■ Outcomes:

Research skill practice; agricultural awareness

■ Procedure:

1. Explain to your little PAL that a cheeseburger is really more than something good to eat. It also represents how agricultural products come together to create delicious foods. In this activity, you and your PAL will explore the foods that go into a cheeseburger, where they come from and how they are produced.
2. If possible, have your PAL take apart a bacon cheeseburger and lay out its ingredients on wax paper. (If you can't use a real cheeseburger, use a picture.) Your PAL will probably find a bun, ketchup, mayonnaise, pickles, lettuce, bacon, cheese and a hamburger.
3. Have your PAL use construction paper to make a “cheeseburger storybook” that represents the cheeseburger’s “layers” with a different paper color for each ingredient. (See the “Discussion Points” on this page for suggested paper colors.)
4. Use several sessions to explore the cheeseburger ingredients. Consult children’s books, videos and web sites together. For each ingredient, help your PAL discover—
 - What agricultural products are used to make this food? (Use a fast food restaurant’s ingredient list or food packages from home to find answers. Also see “Discussion Points” for hints.)
 - Where are the agricultural products produced?
 - How are they processed before being used in the cheeseburger?
 - In what other foods are these products used?
5. Have your PAL add pictures and words to the cheeseburger storybook to show what he or she discovers.
6. After you have explored the entire cheeseburger together, review your little PAL’s storybook. Encourage your PAL to share it at home. If possible, celebrate by having a bacon cheeseburger together!

Materials Needed:

- bacon cheeseburger (or picture of one)
- wax paper
- colored construction paper
- stapler
- pencil, crayons and/or markers
- information resources (books, videos, magazines, Internet access)

Time Needed:

Five sessions, approximately 30 minutes each

Related Subjects:

Language arts; science (investigations); visual arts

Extensions:

- Have PALS identify where each cheeseburger ingredient fits in the USDA Food Guide Pyramid.
- Adapt the activity to explore other kid-favored foods, like pizza or spaghetti (with meat sauce).

DISCUSSION POINTS

Try these suggestions for page colors in your PAL’s “cheeseburger storybook.” Agricultural products commonly found in each cheeseburger “layer” are also suggested.

Layer	Color	Agricultural Products
Bun	Tan	wheat, eggs, corn syrup, soybean oil
Ketchup	Red	tomatoes, corn syrup
Mayo	White	eggs, soybean oil
Pickles	Green	cucumbers, corn syrup
Lettuce	Lt. Green	
Bacon	Lt. Brown	pigs (or turkeys)
Cheese	Yellow	milk
Burger	Brown	cattle (or turkeys)
Bun	Tan	wheat, eggs, corn syrup, soybean oil

Source: *the imAGination station* (West Des Moines, Iowa: Iowa Agriculture Awareness Coalition, 1996).

Use this demonstration to show your PAL how important it is to preserve and improve the best agricultural practices.

■ Objectives:

Student will observe the relative proportion of land available for agricultural use and learn about practices to make the best use of it.

■ Outcomes:

Agricultural awareness; observation of fractions

■ Procedure:

1. Ask your little PAL to imagine that the apple is the earth. Share the following information as you cut the apple.
2. Cut the apple into quarters. Set aside three of the quarters. These represent the oceans of the world. The fourth quarter roughly represents the total land area left.
3. Slice this land quarter in half, giving you two $\frac{1}{8}$ th-world pieces. Set aside one of these pieces. This is land where people cannot normally live (the polar ice caps, deserts, swamps and very high or rocky, mountainous areas). The other $\frac{1}{8}$ th piece is the land area where people live. It is not all used to grow the foods we need.
4. Slice the $\frac{1}{8}$ th piece into four sections (this gives you four $\frac{1}{32}$ nd pieces). Set aside three of these pieces. These are areas too rocky, too wet, too cold, too steep or with soil too poor to actually produce food. They also include the areas of land that could produce food but are buried under cities, highways, suburban developments, shopping centers and other structures that people have built.
5. Take the $\frac{1}{32}$ nd piece that remains. Carefully peel this slice. This tiny bit of peel represents the surface, the very thin skin of the earth's crust upon which humankind depends for its food. Less than 5 feet deep, it represents the amount of food-producing land.
6. Talk to your PAL about the ways agricultural producers use the land to provide the most food while preserving the environmental quality of the land, air and water.

Materials Needed:

- one apple
- paring knife

Time Needed:

10 minutes

Safety Precautions:

Only the big PAL should use the knife.

Related Subjects:

Mathematics (fractions); science (properties of earth materials, types of resources); social studies (people, places and environments; global connections)

DISCUSSION POINTS

The cross-section of the apple also illustrates the earth's make-up. The red peel represents the earth's thin crust. About half of the white part of the apple represents the earth's mantle. The inner half of the fruit represents the earth's outer core. The core of the apple represents the earth's inner core.

Land use practices that preserve the land include crop rotation, no-till farming and integrated pest management.

Introduce your PAL to the steps food takes from field to table.

■ Objectives:

Students will identify food production and processing activities in drawings, sequence the pictures and tell the story of one food from the field to the table.

■ Outcomes:

Agricultural awareness; sequencing skills

■ Procedure:

1. Choose one food that is grown, processed and sold in your state. Draw or find pictures that illustrate the steps it goes through between producer and consumer. You might want to create or choose pictures that show the following steps: growing, harvesting, sorting and packing, storing, transporting and distributing, and marketing and selling. (The box on this page shows a sample set of pictures for apples.)
2. Put the pictures in random order. Show your little PAL the pictures and talk about what is happening in each.
3. If your pictures are all on one page, have your PAL cut them apart. Then, challenge your PAL to put the pictures in order.
4. Review your PAL's order and talk about the correct order of the steps. Explain why steps in the chain take place in that order.



Materials Needed:

- drawing paper and pencil, computer art program or drawings and photographs of agricultural processes
- scissors
- paper and crayons

Time Needed:

30-45 minutes

Related Subjects:

Language arts (sequencing); social studies (production, distribution and consumption); science (life cycles of organisms)

Extensions:

- Help your PAL create his or her own set of pictures for another agricultural food product.
- If possible, take little PALS on a tour that “follows” an agricultural food product through all the steps in its chain.

DISCUSSION POINTS

The agri-food chain is the series of steps food goes through from field to table. The steps include growing, harvesting, sorting and packing, storing, transporting and distributing, and marketing and selling.

Simulated Grain Bin Agricultural Mechanics & Technology

Show your PAL the dangers of playing around grain wagons, trucks and bins.

■ Objectives:

Student will help prepare, observe and reflect on a demonstration of gravity flow grain handling equipment.

■ Outcomes:

Safety awareness

■ Procedure:

1. Have your PAL watch as you cut off the bottom of the plastic jug. Replace the cap and turn over the jug. Have your PAL help fill the jug with grain or popcorn.
2. Ask your PAL to stand the action figure on top of the grain. Talk to your PAL about gravity flow grain handling equipment. (See information in “Discussion Points.”) Show pictures of real gravity flow grain handling equipment.
3. Ask your PAL to guess what might happen to the action figure when you open the jug cap to let the grain flow.
4. Have your PAL remove the jug cap and observe what happens. (The grain will flow rapidly out of the jug, pulling the action figure to the bottom.)
5. Tell your PAL that the same thing could happen to a real person. A real person would be trapped and suffocated in the gravity flow wagon, truck or bin, and could even die. Make sure your PAL understands never to play around grain handling equipment.

Materials Needed:

- empty large plastic jug and cap
- strong scissors or knife
- harvested grain (corn, soybeans, oats) or unpopped popcorn to fill the jug
- small action figure or doll

Time Needed:

30-45 minutes

Related Subjects:

Science (personal health)

DISCUSSION POINTS

Equipment used to transport and store grain on the farm has hidden dangers. These dangers are due to the method of emptying gravity flow wagons, trucks and bins. Death by suffocation may result if a person becomes trapped in the grain. The danger is not obvious, but the results are serious.



Source: *Teaming Up...A Farm Safety Walkabout For Kids* (Earlham, Iowa: Farm Safety 4 Just Kids, 1993).

Biodegradable Plastic Agricultural Mechanics & Technology

Show your little PAL how agricultural research discovers technologies that benefit society and the earth.

■ Objectives:

Student will create and observe the properties of biodegradable plastic made from corn.

■ Outcomes:

Awareness of physical and chemical processes; measurement practice; awareness of nontraditional agricultural products

■ Procedure:

1. Read the ingredient lists from the cornstarch and corn oil packages to your little PAL. Explain that these products are made from corn, just like corn sold at the grocery store.
2. Have your PAL measure a tablespoon of cornstarch into the paper cup. Help your PAL use the eyedropper to add two drops of corn oil to the cornstarch. Have your PAL measure and add one tablespoon of water to the oil and cornstarch. Finally, help your PAL add two drops of his or her favorite food coloring.
3. Have your PAL stir the mixture until it is completely combined. Ask your PAL to tell you what he or she observes about—
 - how the biodegradable plastic looks;
 - how it acts;
 - how it might be used when it becomes hard.
4. Next, spray cookie cutters with nonstick spray. Place the cookie cutters onto flat plates covered with wax paper. Pour your mixture into the cookie cutter shapes. Microwave on high 20-25 seconds. After the shapes have cooled slightly, peel them out of the cookie cutter forms. Have your PAL report observations about—
 - what happened to the plastic;
 - how some of the plastic reacts if you make it into a ball.

Materials Needed:

- tablespoon measure
- eyedropper
- box of cornstarch
- bottle of corn oil
- water
- small plastic cup
- spoon or stirring stick
- plate covered with wax paper
- access to microwave oven
- cookie cutters

Time Needed:

About 30 minutes

Related Subjects:

Science (properties of objects and materials)

Extensions:

- Challenge your little PAL to list and/or find other nonfood items that include corn products. Examples might include a golf tee, packaging “popcorn,” car fuel filter, disposable diaper, baby powder or batteries! Corn is also used to make lubricants and in making paper.
- Use a school or home compost pile to show your little PAL what happens to biodegradable and “regular” plastic. Place sample items in the compost pile. After several weeks, return to dig them up. Ask your PAL to describe what has happened.

DISCUSSION POINTS

Agricultural researchers are constantly trying to create new biodegradable products. These products are much less harmful to the environment; both when they are made and when they are thrown away. Corn and other plants contain starches and oils that can be used to replace products made from petroleum (oil) and related products. This is good because there is only so much petroleum under the earth’s surface, and

much damage is done getting it out. Also, petroleum products are not biodegradable and are a problem to throw away.

Plants are renewable resources. When properly managed, the earth can be used to grow plants again and again. Many products made from plants are also biodegradable—they break down and return to the soil after they are thrown away.

Hot, Hotter, Hottest Agricultural Mechanics & Technology

Conduct this experiment to show your PAL how the sun affects different surfaces.

■ Objectives:

Student will observe the effects of light absorption and reflection.

■ Outcomes:

Basic understanding of solar heat; awareness of differences in how surfaces absorb or reflect light and heat; practice measuring and reading thermometers

■ Procedure:

1. Spray paint the insides of three cups black. (Have your little PAL stand at a distance and watch, or do this ahead of time.)
2. When the cups are dry, have your PAL measure and pour 2 tablespoons of water in EACH painted cup and in ONE unpainted cup.
3. Prepare the cups as follows:
 - 1 black cup inside a white cup, covered with plastic wrap and held with a rubber band;
 - 1 black cup inside a white cup, uncovered;
 - 1 white cup inside another white cup, covered with plastic wrap and held with a rubber band; and
 - 1 black cup, uncovered.
4. Line the cups up on a sunny window sill. Put a small thermometer into the water in the cups. (Poke the thermometer through the plastic wrap as needed.)
5. After about 30 minutes, have your PAL look at the four thermometers.
6. Have your PAL write down the temperature of the water in each cup combination. Then discuss: Which is the hottest? Which is the coolest? Can you guess why? What does the cover do?
7. Share with your PAL the “Discussion Points” on this page. Talk about how the absorption and reflection of sunlight affects growing plants. Ask your PAL to think of agricultural locations that absorb solar heat (plowed fields, dark green plantings, compost piles) and ones that reflect solar heat (fish ponds, light-colored plantings).

Materials Needed:

- 7 white plastic or paper cups
- black spray paint
- one-tablespoon measure
- water
- plastic wrap
- rubber bands
- 4 small thermometers (nonmercury)

Time Needed:

About an hour

Safety Precautions:

Make sure your little PAL stands at a distance when you use spray paint. If a thermometer should break, have your PAL move away immediately. Carefully clean up all the glass.

Related Subjects:

Science (properties of materials, light, heat, comparisons, measurement)

DISCUSSION POINTS

Cup #3 (white cup inside white cup) will be coolest, showing that black absorbs sunlight while white reflects it.

The cover holds in water and heat.

Having a second cup on the outside serves as insulation, just as insulation in our homes helps prevent heat loss.

Challenge your little PAL to create the tallest possible free-standing structure with available materials.

■ Objectives:

Student will experiment with structural design and budgeting.

■ Outcomes:

Basic understanding of construction; basic awareness of costs and benefits

■ Procedure:

1. Arrange to work on this activity with two or three other PALS pairs. The big PALS will set up the activity, manage the materials and calculate total “costs” for materials used. The little PALS will do the experiment.
2. The group’s challenge is to build the tallest possible structure at the lowest possible cost (see cost details in “Discussion Points”). The little PALS should start by talking through ideas for building the structure.
3. Give the little PALS team about 30 minutes to build their structure. It must stand on its own with no other supports.
4. Have one little PAL measure how tall the structure is. Have one big PAL add up how much it “cost.”
5. Discuss results with the little PALS. Ask:
 - What was the most difficult part of building your structure?
 - What problems did you have to solve?
 - What changes did you make after beginning construction?
 - If you could do it again, what changes would you make?
 - How might you have cut costs?
 - What could you have done if you spent more money?
6. Talk to your little PAL about agricultural structures, including barns, fences, equipment sheds, etc. Discuss the need to design agricultural structures that do the job for the lowest reasonable cost.

Materials Needed:

- 20 plastic drinking straws
- 20 straight pins
- 10 small paper clips
- 1 roll masking tape
- 1 measuring tape
- pen or pencil and paper
- calculator

Time Needed:

About an hour

Safety Precautions:

Make sure the little PALS handle the pins safely.

Related Subjects:

Science (properties of materials)

DISCUSSION POINTS

Add up how much the little PALS spend to make their structure based on these imaginary costs:

Straw	\$1.00 each
Paper clip	\$.20 each
Straight pin	\$.10 each
Masking tape	\$.20 an inch



Source: Adapted from “Free Standing Structure” at ericir.syr.edu/Virtual/Lessons/Interdisciplinary/INT0023.html

Center of Gravity Agricultural Mechanics & Technology

Demonstrate agricultural equipment safety issues with your little PAL.

■ Objectives:

Student will observe the effects of load placement on equipment stability.

■ Outcomes:

Basic understanding of balance and center of gravity

■ Procedure:

1. Have your little PAL hitch together the model tractor and wagon. Help your PAL measure and seal bean packages that weigh 1/4 pound (4 oz.), 1/2 pound (8 oz.) and 1 pound (16 oz.).
2. With your PAL, use materials at hand to create a route for the tractor load. Include places where the tractor and wagon must go up hill, cross-hill and on a level surface.
3. Challenge your PAL to add all three bean packages to the wagon and run it through the route without any tips. (Your PAL can use items in addition to the beans for an even heavier load.) Keep adding weight until the load tips. Set up again. This time, have your PAL shift the load more toward the front, back or side of the wagon. What difference does this make? Next, place a small empty box inside the wagon. Your PAL now must pile the load on top of this box. How does that affect what the wagon can safely carry?
4. Talk about how weight and the way a load is placed affect farm equipment's stability. Give examples of tractor rollovers and dumped loads that you know about. Review farm equipment safety rules with your little PAL.

Materials Needed:

- model tractor and wagon
- hard beans
- kitchen or scientific scale
- sealable plastic bags
- small box

Time Needed:

30-45 minutes

Related Subjects:

Science (position and motion of objects, measurement, personal health)

Extension:

- Use other model farm equipment and follow the same procedure. Have your PAL compare the similarities and differences between the types of equipment.

DISCUSSION POINTS

An item's *center of gravity* is a point within the item where its weight is concentrated. The force of gravity acts on this center. If a load's center of gravity is not placed properly (if it is off-balance or too high, for example), the force of gravity will cause the load to tip.

Slip-Slidin' Away Agricultural Mechanics & Technology

Teach your little PAL about lubricants and their role in machines.

■ Objectives:

Student will test and observe the effects of a variety of lubricants.

■ Outcomes:

Basic physical science understanding

■ Procedure:

1. Place 15 gelatin cubes into one bowl. Place the second bowl about 6" away.
2. Challenge your PAL to move as many cubes as possible from the first bowl to the empty bowl in 15 seconds. Your PAL can use only the thumb and index finger, one cube at a time. Track the time. Have your PAL write down the number moved.
3. Return all the cubes to the first bowl. Pour 1/4 cup of dish detergent over the cubes. Gently mix, so the cubes are well coated with detergent. Challenge your PAL again. Track 15 seconds. Have your PAL write down the number moved.
4. Throw away the used cubes and detergent. Clean and dry both bowls. Put 15 new cubes into the first bowl. Pour 1/4 cup of water over the cubes and mix to coat. Challenge your PAL again, track 15 seconds and have your PAL write down results.
5. Throw away the used cubes and detergent. Clean and dry both bowls. Put 15 new cubes into the first bowl. Pour 1/4 cup of vegetable oil over the cubes and mix to coat. Challenge your PAL again, track 15 seconds and have your PAL write down results.
6. Ask your PAL to analyze the results. Which liquid allowed your PAL to move the most cubes? Which allowed your PAL to move the fewest cubes? Which was the best lubricant (the most slippery)? Which was the worst?
7. Talk to your PAL about the importance of lubricants in modern agricultural technology.

Materials Needed:

- gelatin cubes, made in advance by—
 - dissolve 4 envelopes of unflavored gelatin in a bowl with 2 cups of hot water
 - coat inside of a 9" x 12" pan with vegetable oil
 - pour gelatin mixture into pan
 - refrigerate until firm (3-4 hours)
 - cut into cubes about 1" x 1" x 1"
- two bowls
- liquid dish detergent
- water
- vegetable oil
- measuring cup
- watch with second timer

Time Needed:

About 20-30 minutes

Safety Precautions:

Warn your little PAL not to eat any of the gelatin squares used in the experiment.

Related Subjects:

Science (properties of objects and materials)

DISCUSSION POINTS

Slippery substances are called *lubricants*. They are very important in modern technology. Cars, trucks, airplanes, tractors and machines all have parts that rub against one another. These parts would heat up, wear down and stop working if we did not have lubricants.

Source: Adapted from "Slippery Substances—Lubricants" at ericir.syr.edu/Virtual/Lessons/Science/General/GEN0020.html

Tap your young PAL's creative juices and interest in horses.

■ Objectives:

Student will construct a hobbyhorse head, based in part on observed characteristics of real horses.

■ Outcomes:

Knowledge of farm animals; practice identifying distinguishing characteristics

■ Procedure:

1. Show your little PAL pictures of horses and talk about what distinguishes a horse from other farm animals (the shape of its head, its mane, its ears, its size, etc.)
2. Have your PAL draw the outline of a horse's head to fill one piece of the butcher paper, cut it out and trace it again onto the other piece of paper. Your PAL should cut out the second horse head shape, also. (Hint: You might want to make a horse head-shaped pattern instead of having your little PAL draw from scratch.)
3. On both outlines, help your PAL draw the horse's mouth, eyes and nose features with markers.
4. Help your PAL staple the horse heads together, back-to-back. Leave the "neck" open. Have your PAL stuff shredded newspaper inside the opening so the head is "stuffed."
5. Have your PAL glue on yarn for a mane.
6. Insert the dowel or yardstick to make a hobbyhorse. (You may have to tape the stick in place.) Talk to your PAL about what it's like to ride and care for a real horse.

Materials Needed:

- pictures of horses and other farm animals
- two pieces of butcher paper, each about 12" x 20"
- scissors
- markers
- stapler
- shredded newspaper
- yarn
- glue
- three-foot-long 1.5"-2" dowel or yardstick

- masking tape

Time Needed:

30-45 minutes

Related Subjects:

Science (characteristics of organisms); visual arts

Extensions:

- Take your little PAL to visit, and perhaps ride, a real horse.
- Learn about the different breeds and uses of horses.

Challenge your little PAL's knowledge of farm animal safety.

Objectives:

Student will increase knowledge of livestock safety rules by completing a crossword puzzle.

Outcomes:

Livestock safety knowledge; vocabulary expansion

Procedure:

1. Use a copier or scanner to enlarge the box on this page into a worksheet for your PAL.
2. Challenge your PAL to complete the crossword puzzle on his or her own. Help if your little PAL is stumped.
3. Review your PAL's answers and talk about basic safety rules around farm animals.

Materials Needed:

- worksheet
- pencil

Time Needed:

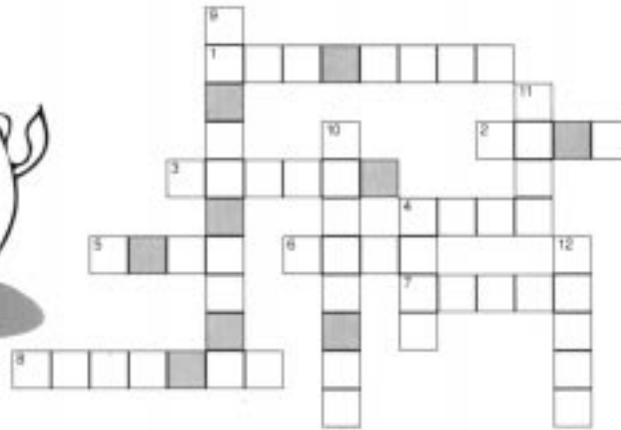
About 45 minutes

Related Subjects:

language arts; science (characteristics of organisms)

Extensions:

- Take your PAL to the school's livestock lab or to a farm. Demonstrate and have your PAL practice livestock safety rules.



Livestock Safety Crossword

Use the clues to solve the crossword puzzle.

Across

1. _____ animals when working in tight quarters.
2. A _____ attitude while working with animals will help them feel safe.
3. _____ protect humans and animals.
4. _____ areas should be separate from livestock.
5. Hard toed shoes will protect _____ when working closely with animals.
6. _____ animals can be aggressive.
7. It is unsafe to _____ animals.
8. Animals may be _____ if you are loud or move quickly.

Down

4. All animals, even _____, can be unpredictable.
9. Mother animals are _____ of their young.
10. Animal _____ gives us warning signals when they are feeling threatened.
11. Do not handle _____ animals.
12. Bared _____ and ground pawing may indicate an animal is upset.

Word List

play	baby	pets	protective
behavior	male	restrain	teeth
tease	fences	feet	calm
spooked			

Source: *Teaming Up...A Farm Safety Walkabout For Kids* (Earlham, Iowa: Farm Safety 4 Just Kids, 1993).

Have fun with your PAL “the old fashioned way.”

■ Objectives:

Student will explore traditional and modern methods of milking cows.

■ Outcomes:

Awareness of animal husbandry practices

■ Procedure:

1. Help your PAL make a single pinhole in each fingertip of the latex glove.
2. Clip the prepared glove to a clothesline hung about three feet above the ground outside or inside over a floor that won't be damaged by water. Place a milking pail below the glove and a low stool or chair beside it.
3. Fill the glove with water and tie it at the top.
4. Have your little PAL practice “milking” by squeezing the fingertips so the water goes into the bucket.
5. Show pictures of today's milking parlors and talk about why most cows are no longer milked by hand.

Materials Needed:

- latex rubber glove
- straight pin or safety pin
- clothesline
- milking pail
- stool or chair
- water (in pitcher or plant watering can)
- milking parlor pictures

Time Needed:

About 30 minutes

Safety Precautions:

Make sure your little PAL handles the pin carefully.

Related Subjects:

Social studies (time, continuity and change; science, technology and society)

Extension:

- Take your little PAL to visit a milking parlor that uses current technology and practices.

DISCUSSION POINTS

Milk is an important source of nutrition, especially for growing young people. Milk and milk products (like yogurt, cheese and ice cream) are good sources of calcium and protein: two nutrients that are essential to life.

Our bodies use calcium to build strong bones and teeth, contract and relax muscles, keep nerves healthy and clot blood.

Our bodies use protein to grow, move, reproduce, repair and digest.

Most milk bought at the store also contains added Vitamin D, which helps our bodies use the calcium in milk and other foods.

Source: <http://members.aol.com/MGoudie/Funonthefarm.html>

Teach your PAL the correct terms for farm animals.

Objectives:

Student will identify proper terms for livestock by gender and life stage.

Outcomes:

Vocabulary expansion; increased awareness of agricultural animals

Procedure:

1. Use a copier or scanner to enlarge the box on this page into a worksheet for your PAL. (Note: You can also find a similar sheet on the World Wide Web at <http://www.ars.usda.gov/is/kids/teachers/WhizKidAct.htm>.)
2. Challenge your PAL to complete the chart on his or her own. Help if your little PAL is stumped. (See the solutions at right.)
3. Review your PAL's answers and talk about the farm animals you work with.
4. Quiz your PAL to use the correct terms to describe agricultural animals in pictures.

Materials Needed:

- worksheet
- pencil
- pictures of agricultural animals

Time Needed:

15-20 minutes

Related Subjects:

Language arts (vocabulary); science (life cycles of organisms)

Extension:

- Have your PAL research proper terms for cats, deer, rabbits and other familiar animals.

Solutions:

(From left to right, top to bottom): bull, cow, calf; boar, sow, piglet/shoat; buck/ram, ewe/dam, lamb/lambkin; rooster/cock, hen/pullet, chick; stallion, mare, foal; tom, hen, poult

All in the Family

Use the following terms to fill in the chart. Write in which babies go with which moms and dads. (Hint: Several have more than one answer. PLUS, we've thrown in some extras for excitement!)

calf	chick	pullet	cow	hen
rooster	shoat	piglet	boar	cock
foal	mare	lambkin	ram	heifer
dam	buck	gilt	lamb	whelp
tom	kid	poult	joey	
bull	ewe	sow	stallion	

	Male	Female	Young
Cattle			
Swine			
Sheep			
Chickens			
Horses			
Turkeys			

Source: Adapted from *Whiz Kid Activity Packet* (Beltsville, Md.: Agricultural Research Service, U.S. Department of Agriculture, 1998).

Help your PAL understand that animal feed, just like human food, delivers nutrition for good health.

■ Objectives:

Student will use information on feed labels to explore animals' nutritional needs.

■ Outcomes:

Basic animal science knowledge

■ Procedure:

1. Talk to your little PAL about the food that pets eat. Explain that food given to animals is called "feed." The food they need depends on good nutrition. Just like people, animals need a well-balanced diet to stay healthy. Pets need different kinds of food than people.
2. Have your PAL look at the pet food package and tell you what kind of information it gives. Then, challenge your PAL to find the following information on the label:
 - What type of animal is the feed for?
 - What are its ingredients?
 - What nutrition does it provide?
 - What is the package size?
 - What does it tell you about how much to feed the animal?
3. Share the information in "Discussion Points" with your little PAL.

Materials Needed:

- package of pet food

Time Needed:

20-30 minutes

Related Subjects:

Language arts; science (characteristics of organisms)

Extension:

- Have your little PAL compare information on different pet food packages.

DISCUSSION POINTS

Type of Animal: On the front of the label, a word or picture tells you the kind of animal feed. It may also tell the stage of life or activity level to help you choose the right feed.

Ingredients: Animal feed is a mixture of products called "ingredients." Pet feed ingredients are listed from largest to least. That means the main ingredient will always be listed first.

Nutrition: An animal feed label must have a list of the nutrition the feed supplies. This list must have three things: protein, fat and fiber. The label may also tell you if the feed is a complete and balanced diet.

Package Size: This tells you how much feed you are buying. Animal feeds are almost always sold by weight.

Feeding Instructions: Most labels will tell how much feed you should give the animal and how often it should be fed.



Source: *Illinois Ag Mag, Issue 7* (Bloomington, Ill.: Ag in the Classroom, Illinois Farm Bureau®).

Teach your little PAL how to evaluate pet food choices.

■ **Objectives:**

Student will observe, measure and compare information about pet food products.

■ **Outcomes:**

Observation, measurement and data analysis practice; critical thinking practice

■ **Procedure:**

1. At the session before completing this activity, find out if your little PAL has a pet. If not, find out what kind of pet your PAL would like to have someday.
2. Collect samples and packages of at least three different types of feeds for that pet.
3. Have your little PAL create a chart like the one below. Your PAL will use this chart to write down information about the feeds.
4. Help your PAL fill out the chart using information on the pet food package.
5. Have your PAL look at, feel and smell the pet food samples, then write down similarities and differences between the samples.
6. Help your PAL measure out and weigh one serving of each of the sample feeds. Your PAL can add this information in the appropriate places on the chart.
7. Ask your PAL what the chart tells about the different pet food choices. Have your PAL tell you which food seems the healthiest and which is the best value for its cost.

Materials Needed:

- variety of pet foods (different types and/or different brands) for the chosen animal
- paper
- pencil
- container to measure pet food serving
- kitchen or scientific scale
- paper towels (to clean up)

Time Needed:

30-45 minutes

Safety Precautions:

Do not let your little PAL eat the pet food! It is made for an animal's digestive system.

Related Subjects:

Language arts; mathematics (data gathering, measurement); science (observation)

Sample Chart

Have your little PAL create a chart like this to record information.

	Feed 1	Feed 2	Feed 3
price			
serving size			
weight of one serving			
price of one serving			
target age			
protein			
fat			
fiber			
first 5 ingredients			
moisture			
texture			
smell			
appearance			

Source: <http://eric.syr.edu/Projects/Newton/15/petfood.html>

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The McBain FFA Chapter, Michigan, uses this activity to teach little PALS about insects.

■ Objectives:

Student will help build an insect observatory, collect specimens and observe their characteristics and behaviors.

■ Outcomes:

Manual skill practice; basic entomology knowledge

■ Procedure:

1. Have your PAL measure and mark a line halfway down the height of the cardboard container. Cut the container along your PAL's line. If you are using a tall container, cut off excess cardboard so you have two ends with about 2 inches of cardboard each. Be sure to keep the cover to the container!
2. Have your little PAL decorate the cardboard ends with stickers, paint or markers.
3. Cut the window screen or plastic mesh into a rectangle. The rectangle's length should equal the circumference of your cardboard container, plus 2" for overlap. The rectangle's height should be 6".
4. Attach the screen to the outside of the cardboard sections with masking tape. Make sure the screen overlaps where it comes together.
5. Have your PAL place the twigs, grass and leaves in the observatory and put on the cover.
6. Go outside and help your PAL collect insects in a sweep net and by hand. Place them into the observatory and replace the cover. Stay away from bees and other stinging insects!
7. Ask your PAL to observe and describe the insects he or she has collected. What do they look like? What do they do? Can you tell what they eat? Help your PAL find out the names of any unfamiliar bugs.
8. Release the insects. Encourage your PAL to collect insects at other places and times and tell you about what he or she observes.
9. Talk about the helpful and harmful ways insects affect agricultural production.

Materials Needed:

- round cardboard container (like oatmeal or nut containers)
- window screen or flexible plastic mesh
- stickers, markers, paint, paintbrush
- scissors
- wide masking tape
- twigs, leaves, wood chips, grass and other natural habitat

Time Needed:

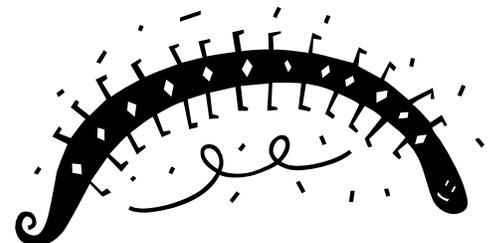
About 45 minutes

Safety Precautions:

Be sure your PAL stays away from bees and other stinging insects when using the sweep net. (Some people become very ill when stung.)

Related Subjects:

Science (characteristics of organisms, organisms and their environment)



Source: Provided by Mary Beth Lindquist, McBain FFA Chapter, Michigan.

Create an observation platform and watch for butterflies with your little PAL.

■ Objectives:

Student will help construct observation platform, understand how it functions and build awareness of butterfly varieties.

■ Outcomes:

Manual skill practice; observation practice; entomology awareness

■ Procedure:

1. Work with your PAL to construct a butterfly platform, as described in “Instructions” on this page.
2. Hang the platform from a tree branch at a height your PAL can observe.
4. Place the fruit or blossoms on the platform. See whether butterflies start to visit immediately. If not, come back after 30 minutes or so.
5. Talk about why the butterflies end up inside the net. (When they want to leave the fruit or flower, their natural tendency is to fly straight up. They can’t get out that way.)
5. Have your PAL observe the different kinds of butterflies. Ask your PAL to write descriptions and draw pictures that compare the butterflies that visit the platform.
6. Release the netted butterflies and save the platform to use with your little PAL some other time.

Materials Needed:

- two-foot square of fine, flexible netting
- three-foot square of mid-weight cardboard
- three six-foot lengths of string or twine
- knitting needle or punch
- masking tape
- needle and thread
- rotting fruit or flower blossoms

Time Needed:

About 45 minutes

Related Subjects:

Science (characteristics of organisms); visual arts

Extension:

- Take your little PAL to visit a garden specially planted to attract butterflies (local residents or a nearby nursery may have one).

INSTRUCTIONS

Here’s how to construct the butterfly platform.

Find and cut a very small hole in the center of the netting square. Lay the square out flat on the floor or a table. Take one of the 6-foot-long strings and lay it on top of the netting on the diagonal, from corner to corner. Take another string and lay it on the other diagonal, between the remaining two corners. The centers of the strings should cross each other over the small hole you cut in the netting. The strings should also extend about 11 inches beyond each corner of the netting.

Using the needle and thread, sew the netting onto the strings near the corners. Stitch through the netting, up over the string and back through the netting several times. Make a knot and cut off the excess thread and needle. Repeat at each corner of the netting.

Use the knitting needle or punch to make holes near all four corners of the cardboard square. Punch each hole about 1" from the corner. Pass one string end through each corner, working around the square (don’t twist or intertwine the strings). Tie a knot at the back of the cardboard. Cover these knots with masking tape to make sure they don’t pull back out through the holes.

Turn your project over, so the netting is on top. Use the final string to loop through the hole in the netting. Loop it under the other two, crossed strings. Hang the butterfly platform by tying this final string onto a tree branch. The crossed strings and netting will form a pyramid shape, with the cardboard platform below. There should be several inches of space between the top of the cardboard and the bottom of the netting. This is where the butterflies enter!

Use drawing exercises to teach your PAL to closely observe the natural world.

■ Objectives:

Student will observe and draw a natural item and reflect on the experience.

■ Outcomes:

Observation skill practice; visual arts skill practice; reflective thinking

■ Procedure:

1. Take your PAL someplace where he or she can see natural resources, like a patch of woods, park, garden or stream bank. Ask your PAL to look around and tell you what he or she sees. Point out things you observe that your PAL might have missed.
2. Have your PAL select one small part of a plant, animal or rock and concentrate on it for a minute or so. Then, have your PAL do each of the following exercises:
 - Put your pencil on your paper. Without looking at the paper and without lifting the pencil, trace the object in great detail. Do this for two minutes.
 - Using the same object, quickly sketch it in 5 seconds. Then, take 15 seconds to sketch it. Next, sketch it a third time, taking 30 seconds.
 - Move away from the object and take 3 minutes to draw it from memory. Try to concentrate on the one or two most important things you remember (like shape, texture, color, etc.)
3. Ask your PAL how closely he or she had to look at the object to be able to draw it. It is important and rewarding to observe nature. Foresters, rangers and outdoor guides use their observations to make decisions about using and maintaining natural resources.

Materials Needed:

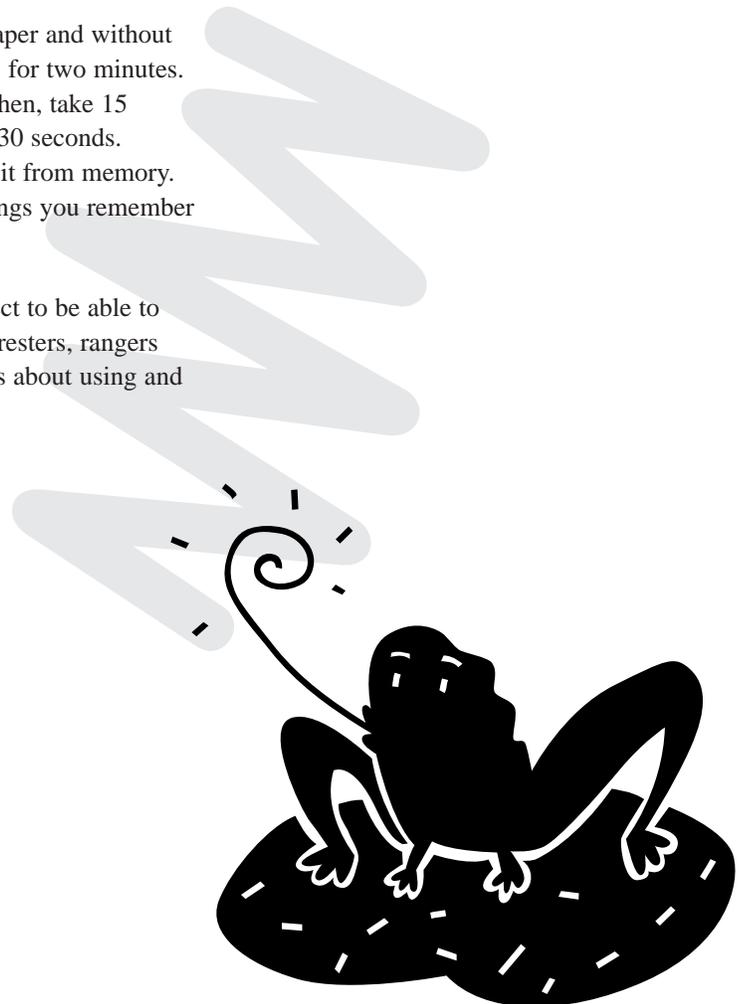
- sketch pad or paper
- pencil

Time Needed:

About 30 minutes

Related Subjects:

Science (observation, properties of objects and materials); visual arts



Source: http://willow.ncfes.umn.edu/lab_exercises/nature_journal.htm

The Wapsie Valley FFA Chapter, Iowa, takes little PALS on a “scavenger hunt” for items in nature.

■ Objectives:

Student will collect and report on natural resources items.

■ Outcomes:

Vocabulary expansion; observation of natural resources

■ Procedure:

1. Obtain permission to take your little PAL off school grounds and around the community.
2. Produce a list of nature items your little PAL could find locally. Write it out for your PAL. (See some suggestions in “Discussion Points.”)
3. Serve as your PAL’s “support team” to identify and collect items from the list.
4. Back in the classroom, help your PAL create a poster that shows what he or she found.



Source: Idea suggested by Debbie Kleitsch, Wapsie Valley FFA Chapter, Iowa.

Materials Needed:

- list of items
- poster board or large paper
- markers

Time Needed:

About 45 minutes

Related Subjects:

Science (properties of earth materials, characteristics of organisms); visual arts

DISCUSSION POINTS

Have your little PAL collect natural items that are locally available. Here are some examples.

specific types of leaves

specific types of flowers

a ladybug

different types of grasses

nuts or berries

Help your PAL learn ways to find and observe wildlife.

■ Objectives:

Student will learn and practice techniques for watching wildlife.

■ Outcomes:

Basic knowledge of animal behavior and characteristics

■ Procedure:

1. Use a scanner or copier to enlarge the box on this page into a worksheet for your PAL.
2. Review the wildlife watching tips with your PAL. Tell stories about times you have seen wild animals because you followed tips like these.
3. Take your PAL to a quiet “natural” area near the school. Have your PAL practice the wildlife watching tips and try to spot small animals, birds, reptiles and insects. (If you can’t take your PAL outside, you may be able to use photographs or videos to help your PAL learn to spot “hidden” wildlife.)

Materials Needed:

- worksheet

Time Needed:

30-45 minutes

Related Subjects:

Science (organisms and their environment)

WILDLIFE WATCHING TIPS

Animals, birds, reptiles and insects do not just walk up and introduce themselves. You have to be observant to see wildlife! Here’s how.

1. Walk slowly and quietly. Try not to make any noise at all! Even stepping on a stick can alert wildlife that you are there. It is best to walk a few steps, then stop to look and listen.
2. Listen to the birds. It is easy to tell if the birds are singing happily or are giving an alarm call. If you hear the alarm call of any birds, stop for a while and wait for the birds to start singing again. Even if the birds are silent, this means they are alert and watching you to see what you will do next. Many animals listen to the birds to know if there is danger nearby.
3. Trust your instincts. You may just have a “feeling” that an animal is nearby. Stop and look!
4. Look for movement. Any kind of movement in a still forest or meadow really catches your eye.
5. Look for color. Many birds and reptiles have distinctive colors and patterns.
6. Look up in trees, especially old dead trees. You will often see nests and cavities where large birds, squirrels, raccoons and other animals live.
7. Look along the edges and at the corners of fields. Don’t walk out in the middle of a field. Stay just inside the woods and walk along the field edges.
8. Animals like to take the easiest path through the woods, just like you do. Follow a trail if you can find one.
9. Lots of animals are active at dawn or dusk. You might want to look for wildlife at those times.
10. Don’t leave anything in nature that wasn’t there when you arrived.

Source: http://www.lindsaysbackyard.com/animal_tracks.htm

Your little PAL may be surprised to discover that soil is more than just “dirt.”

■ Objectives:

Student will conduct a simple investigation and observe the settlement of particles within a soil sample.

■ Outcome:

Knowledge about soil particles

■ Procedure:

1. Help your PAL measure the jar and use masking tape to mark half-full and three-fourths full levels.
2. Have your PAL fill the jar half full with soil, then add enough water to make the jar three-fourths full. Help your PAL measure and add the teaspoon of non-foamy detergent. Remove the masking tape markings.
4. Shake the jar well for five minutes (you and your PAL might want to take turns).
5. Set the jar aside and allow the soil to settle undisturbed. It will show results best if you leave it for about 24 hours.
6. Have your PAL look at the soil and tell you what he or she sees. (The soil will have separated into layers.) Explain that the different kind of particles were all mixed together in the soil before. Now they are divided into layers by particle type. Define soil particle types for your PAL. (See information in “Discussion Points.”)
7. Have your PAL measure the depth of each soil particle layer. Compare the amounts of each kind of particle. Talk about how the mix of soil particles affect plants.

Materials Needed:

- clean one-quart jar with lid
- masking tape
- medium-textured soil
- water
- one teaspoon measure
- non-foamy detergent
- ruler

Time Needed:

15 minutes, 24 hours settling time and 10 minutes for follow-up

Related Subjects:

Mathematics (measurement and comparison); science (properties of earth materials, use of instruments)

Extension:

- Collect a variety of soil samples and conduct the same activity. Have your PAL draw and compare the differences in particle layers.

DISCUSSION POINTS

Your little PAL probably thinks “dirt” consists of just one ingredient. This activity shows that soil is made up of different kinds of particles.

Sand is a type of soil particle that is fairly large and can be readily seen or felt. It is loose-grained, feels gritty and is about 1 mm in size. It will be at the bottom of the jar.

Silt is a much smaller type of soil particle. It feels smoother, is about .05 mm in size and tends to hold together when wet. It will be the middle layer in the jar.

Clay is very small-grained (less than .002 mm in size). It feels sticky or slippery when wet. It will be the top layer in the jar.

Help your PAL build a model landscape and observe how water moves in it.

Objectives:

Student will build a model watershed and observe the movement of water and sediments through the model.

Outcomes:

Basic natural resources knowledge; manual skill practice

Procedure:

1. Help your PAL cut the paper cups to different heights, then turn them upside down in the aluminum pan. (These are the “mountains” in the model watershed.)
2. Next, work with your PAL to stretch aluminum foil over the cups. Press the foil down so it fits snugly, high and low, over all the “mountains.” Tightly wrap the foil at the edges of the pan.
3. Punch three or four holes in the upper corner of the plastic jug. Help your PAL fill the jug with water.
4. Hold the container over the model watershed so it sprinkles “rain” on the mountains and valleys. Have your PAL observe where the water goes.
5. Sprinkle the colorful drink powder in some areas of the watershed model. Make it “rain” again. Have your PAL observe where the drink powder goes.
6. Talk to your PAL about the importance of watershed management and how agricultural producers try to keep from polluting the water.

Materials Needed:

- large rectangular aluminum pan (available at the supermarket)
- 5-6 paper cups
- scissors
- extra-wide, heavy aluminum foil
- plastic water jug or milk carton
- knife or punch
- flavored drink powder (grape or cherry show up best)

Time Needed:

45-60 minutes

Safety Precautions:

The big PAL should be the only one to handle the knife or punch.

Related Subjects:

Science (types of resources)

Extension:

- Find a map that shows your local watershed. Share it with your PAL.

DISCUSSION POINTS

A *watershed* is the area drained by a river or a stream in a region. Such an area slopes toward a common, lower point in the earth’s surface.

Erosion is the gradual eating into, washing away or wearing away of a surface, like rocks or soil. Soil erosion can be a serious problem when land is cleared of trees and other plants. Much soil erosion is caused by water and wind. Agricultural conservationists and producers use a variety of methods to prevent soil erosion.



Source: “Water & Forests,” Educational in Nature (Atlanta, Ga.: Georgia-Pacific, August 1996).

Build a “water scope” to give your PAL a glimpse of life below the surface of local ponds, lakes and streams.

■ Objectives:

Student will help build an underwater observatory and use it to observe marine life.

■ Outcomes:

Manual skill practice; basic marine biology knowledge

■ Procedure:

1. Cut off the top and bottom of the milk carton.
2. Help your PAL measure enough plastic wrap to cover the entire carton. Have your PAL place the carton in the middle of the wrap, then pull the wrap up over the outside of the carton and into the top opening. While your PAL holds the wrap, tape the edges to the inside of the carton at the top.
3. Help your PAL wrap the rubber band around the bottom of the carton to stretch and secure the plastic wrap.
4. Test the water scope in an aquarium or aquaculture tank. Have your PAL slowly place the carton bottom under the surface of the water. Help your PAL hold it still while looking through the plastic for something interesting.
5. Review water safety rules with your little PAL. Let your PAL take the water scope home to use around home and on vacation. Remind your PAL to always make sure a responsible adult is watching when he or she goes near the water.

Materials Needed:

- half-gallon paper milk carton, washed and dry
- scissors
- heavy plastic wrap
- 1 heavy rubber band
- masking tape

Time Needed:

30-45 minutes

Safety Precautions:

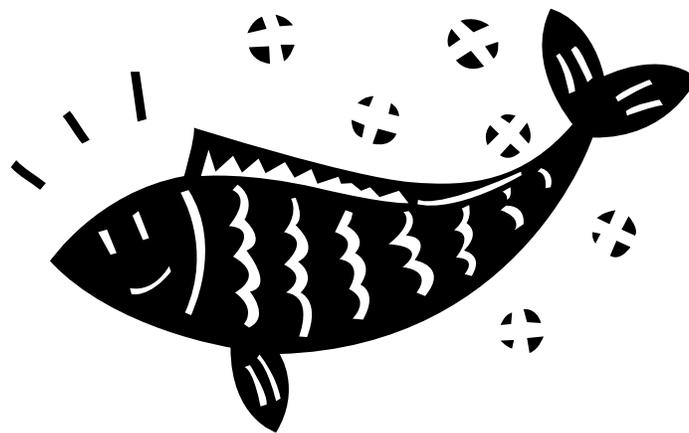
Emphasize water safety rules with your PAL. Remind your PAL to always make sure a responsible adult is watching when he or she goes near the water.

Related Subjects:

Science (characteristics of organisms)

Extension:

- Take your PAL to a nearby pond, lake or stream to use the water scope. Identify and talk about what your PAL sees underwater. Remind your PAL to always make sure a responsible adult is watching when he or she goes near the water.



Tap your little PAL's creativity with this activity that illustrates evaporation.

■ Objectives:

Student will observe that water evaporates, but salt does not.

■ Outcomes:

Basic understanding of evaporation; measurement practice; creative expression

■ Procedure:

1. With your little PAL, prepare salt water “paint” in several colors. For each color, have your PAL measure 1/4 cup of salt into a small container, then measure and mix in 1/4 cup of water. Add several drops of food coloring to the mixture. Make the “paint” in each container a different color.
2. Ask your PAL to paint a picture that has something to do with water and agriculture. Make sure the surface under your PAL's painting can get wet and will not stain.
3. Set your PAL's picture someplace safe to dry overnight. The next day, show the painting to your PAL. Ask your PAL to describe what has happened. (The water will have dried from the painting, while the colored salt remains.)
4. Explain to your PAL that what happened to the picture is called evaporation. (See “Discussion Points” for information.) Talk about some areas of agriculture that are especially affected by evaporation—aquaculture, wetlands management, crop irrigation, etc.

Materials Needed:

- salt
- water
- 4-5 small containers
- food coloring (2-3 colors)
- paint brushes
- paper
- solid and liquid measuring cups

Time Needed:

About 30 minutes; time to dry, then 10-15 minutes follow-up

Related Subjects:

Science (changes in the earth and sky); visual arts

DISCUSSION POINTS

Evaporation is a process through which water molecules change from their liquid state into water vapor. The water is taken up into the air as a gas.

In this activity, the water evaporates and leaves the colored salt behind. Salt does not change into a gas like water. This is one way our salt is produced.

Evaporation is an important part of the water cycle. Water is constantly evaporating from the earth's surface. It becomes a gas in the atmosphere. Later, it becomes liquid again and falls back to earth as rain.

The Triton Central FFA Chapter, Indiana, illustrates the dangers of severe weather with this activity.

■ Objectives:

Student will become aware of the dangers of tornados and other severe storms.

■ Outcomes:

Basic weather knowledge; safety awareness

■ Procedure:

1. Talk to your little PAL about severe weather that occurs in your part of the country. (For ideas, see “Discussion Points.”) Discuss how severe weather affects production of agricultural commodities.
2. With your PAL, construct an experiment to simulate a tornado. Fill one of the 2-liter bottles three-fourths full with water. Have your little PAL add 5 drops of food coloring. Make holes in both bottle caps, big enough for the pipe to fit. Secure the caps on both bottles. Insert the pipe about halfway into the cap of the filled bottle. Set the other, empty bottle upside down on top of it. Position it so the pipe is through both bottle caps, with about half of the pipe in each bottle. Secure the bottles together with duct tape.
3. Flip the taped-together bottles upside down. As the water moves from the top bottle into the bottom bottle, it will flow in a fast, circular motion. This looks the same as a tornado.
4. Review severe weather safety rules with your little PAL.

Materials Needed:

- two 2-liter plastic bottles, with caps
- 1/4" pipe, 1" long
- food coloring
- eye dropper
- punch or knife
- duct tape

Time Needed:

20-30 minutes

Safety Precautions:

Only the big PAL should handle the punch or knife.

Related Subjects:

Science (changes in the earth and sky)

Extension:

- View a video about tornadoes with your PAL.

DISCUSSION POINTS

A storm is a destructive or unpleasant weather condition. A storm might have strong wind, heavy rain, snow, sleet, hail, lightning—or a combination of these. Types of storms include thunderstorms, cyclones, tornadoes, hurricanes and typhoons. The right combination of elements must be present in the atmosphere before a storm will occur.

Source: Provided by Cody Dopson, Triton Central FFA Chapter, Indiana.

Teach your PAL to recognize characteristics of different habitats.

■ Objectives:

Student will categorize flora and fauna by type of habitat and summarize habitat characteristics.

■ Outcomes:

Awareness of habitat differences; awareness of connections between habitat characteristics, flora, fauna and human uses

■ Procedure:

1. Choose three types of habitat to have your little PAL investigate. (See choices in "Discussion Points.") Choose at least one type of habitat that occurs in your state.
2. Help your PAL label index cards with the habitat names. Label five cards with each name.
3. Challenge your PAL to find pictures of plants, animals, insects and reptiles that can be found in each habitat. (Your PAL should find the pictures in the magazines and calendars that you provide.) Help your PAL cut out each example, paste it onto an index card from that habitat and label what it is.
4. Have your PAL compare the examples within each habitat. What do the plants and animals suggest about the habitat? Is the habitat wet, dry or in-between? How hot does it get there? What special characteristics do plants and animals develop in this habitat?
5. Next, have your PAL compare similar examples from different habitats. (For example, pictures of plants from three different habitats.) What are the similarities and differences? How do the differences relate to the habitat?
6. Talk about careers in agriculture that involve managing certain types of habitat (i.e., crop production, livestock production, forestry, etc.)

Materials Needed:

- 15 (or more) 3" x 5" index cards
- nature photographs from magazines and catalogs that show plants and animals found in different habitats
- pencil, pen or crayon
- scissors
- paste

Time Needed:

About 45 minutes

Safety Precautions:

Depending on your little PAL's age, you may need to be the one to use the scissors.

Related Subjects:

Mathematics (sorting, comparisons); science (organisms and their environments)

Extension:

- Visit one of the selected habitats with your PAL. Try to spot the plants and animals pictured on your PAL's habitat cards.

DISCUSSION POINTS

The habitats you use in this activity might include—

- hardwood forest
- evergreen forest
- rain forest
- desert
- prairie
- fresh water wetlands
- tidal wetlands
- freshwater lake
- stream or river
- ocean

Demonstrate the differences between dehydrated and reconstituted foods.

■ Objectives:

Student will observe and measure differences between dehydrated and reconstituted foods.

■ Outcomes:

Awareness of food processing methods; observation and measurement practice; vocabulary expansion

■ Procedure:

1. Have your PAL weigh a piece of dried fruit and write down how much it weighs.
2. With your PAL, follow package directions to reconstitute the piece of fruit.
3. Have your PAL weigh the fruit again. Ask, “how much more does it weigh? What made the difference?” (Help your PAL figure out the answers, if necessary.) Try samples of the fruit before and after it is reconstituted.
4. Next, have your PAL weigh and record the weight of a piece of fresh bread.
5. Leave the bread out in a dry place on a counter or table for two days. (If you must complete this activity in one session, you could start drying the bread two days before you meet with your PAL. This will be less accurate, because it is not the same piece of bread.)
6. Have your PAL weigh the bread again. Ask your PAL to tell you how much less the bread weighs now and what made the difference.
7. Share the “Discussion Points” on this page with your PAL. Talk about agricultural products that are and are not dehydrated and reconstituted.

Materials Needed:

- kitchen or scientific scale that measures ounces or grams
- dried fruit, such as apples, apricots or prunes
- bowl or pan and warm water (according to package instructions to reconstitute fruit)
- slice of fresh bread

Time Needed:

Approximately 30 minutes, then a wait of two days and another 30 minutes

Related Subjects:

Science (properties of objects, measurement, observation); mathematics (measurement, addition, subtraction); language arts (vocabulary)

Extensions:

- Take your PAL to a grocery store and look for dehydrated and reconstituted foods.
- Discuss why different kinds of packaging are important to keep foods moist or dry (whichever is the appropriate “fresh” state). If possible, bring along various packaged products as examples.

DISCUSSION POINTS

To *dehydrate* is to remove water from an object. Many foods are dehydrated, including dried fruits, raisins, dry milk and many others. Dehydrated foods are easier to store and don't spoil quickly.

To *reconstitute* is to add water back into a dehydrated product. Usually, people reconstitute dehydrated foods when ready to eat them. Some liquid orange juice is “reconstituted from concentrate.”

Source: “Farm in the School” Teacher’s Resource Guide (Bloomington, Ill.: Illinois Farm Bureau®, 1989).

Use a tasty treat to introduce your PAL to the idea of yields.

■ Objectives:

Student will observe and calculate differences in yield rates among popcorn kernels and will learn how farmers use a scientific approach and mathematics.

■ Outcomes:

Familiarity with the concept of “yield”; measurement skill practice; subtraction practice

■ Procedure:

1. Explain to your PAL that today’s activity will explore which kinds of popcorn produce the greatest amount. Farmers have to research which kinds of seed give them the greatest amount of produce (vegetables and fruits) to use or sell.
2. Ask your PAL to guess why popcorn pops, then explain why it pops (see information in “Discussion Points” on this page).
3. Have your PAL estimate how many kernels are in the 1/4 cup measure of popcorn. Have your PAL count how many kernels of each color are included in the 1/4 cup. Help your PAL weigh the unpopped corn and write down the weight.
4. Pop the popcorn.
5. Help your little PAL weigh the popped corn and write down the weight. When the unpopped kernels are cool enough to handle, have your PAL count how many kernels of each color did not pop. Have your PAL subtract this from the total number for each color and decide which color popped best. In the meantime, eat the popcorn together!
6. Tell your PAL that figuring out which color kernel popped best is similar to what farmers do to decide which seed type produces best. They measure and weigh how much seed they put into an acre of land. After harvesting the produce, they weigh and compare how much each kind of seed produces. Farmers use scientific approaches and mathematics to manage their farms the best way possible.

Materials Needed:

- 1/4 cup colored popcorn
- 1/4-cup measure
- kitchen scale
- corn popper
- blank paper and pencil

Time Needed:

About 30 minutes

Related Subjects:

Mathematics (counting, subtraction); science (using a scale, properties of objects and materials)

Extensions:

- Have your PAL compare yields from different brands of popcorn.
- Have your PAL compare yields from different methods of popping (microwave, hot air popper, stovetop, etc.)

DISCUSSION POINTS

Popcorn pops because each kernel stores water in a small circle of soft starch. As the kernel is heated, the water heats, builds up pressure and takes up any available room. The outer hard surface gives way to the pressure, the kernel explodes and the starch expands, turning the kernel inside out.

Source: *the imAGination station* (West Des Moines, Iowa: Iowa Agriculture Awareness Coalition, 1996).

Follow a scientific method to help your PAL compare the vitamin C content of various juices.

Objectives:

Student will prepare an indicator solution, test food samples and rank samples from highest to lowest vitamin C content.

Outcomes:

Familiarity with scientific instruments and procedures; measurement skill practice; knowledge of relative vitamin C content

Procedure:

1. Help your PAL measure 1 tablespoon of cornstarch and 250 milliliters of water.
2. Have your PAL watch as you mix enough water into the cornstarch to make a paste, then add the 250 milliliters of water. Put the mixture in a small pan or container and boil for 5 minutes.
3. Help your PAL measure 75 milliliters of fresh water. Have your PAL watch as you use an eyedropper to add 10 drops of the starch solution from step #2.
4. Next, carefully add enough iodine to produce a dark purple-blue color. (Careful! The iodine can stain clothes, surfaces and some pans.) This is your indicator solution, which will show the relative amount of vitamin C in different juices.
5. Measure 5 milliliters of indicator solution (about 1 teaspoon) into a 15-milliliter test tube or small glass container. Prepare one test tube or container for each juice you want to test.
6. Help your PAL use a clean eyedropper to add 10 drops of juice to each test tube. (Use a different juice in each test tube. Clean the eyedropper between juices.)
7. Hold the test tubes against a white background. Have your PAL decide what order to put the test tubes to arrange them from the lightest to the darkest purple. The lighter the solution, the more vitamin C is in the juice. Vitamin C interacts with the indicator solution and causes it to lose its color.
8. Talk to your PAL about how agricultural producers, agents and researchers use scientific approaches to learn more about foods and create the best, safest possible products.

Materials Needed:

- cornstarch
- one tablespoon measure
- water
- science lab beaker with 250 milliliter and 75 milliliter markings or kitchen liquid measuring cup(s) with metric markings
- container and Bunsen burner or small pan and stove
- eyedropper
- 2% iodine solution (available at a pharmacy)
- five 1/4-cup samples of fruit juices and drinks to be tested
- five 15-milliliter test tubes and rack or five small, equal-sized glass containers

Time Needed:

45 minutes to an hour

Safety Precautions:

Make sure your little PAL stands at a distance when you use the Bunsen burner or stove. Do not let your PAL reach toward or touch a hot container. Be careful that the iodine does not stain anything.

Related Subjects:

science (scientific inquiry, instrument use, properties of objects and materials)

DISCUSSION POINTS

In science, an *indicator* is a substance that changes one of its characteristics (usually color) to reveal the presence, absence or concentration of another substance. In this activity, your indicator solution of water, cornstarch and iodine changes to a lighter color in the presence of vitamin C.

Use this fun activity to introduce your PAL to a variety of fruits.

Objectives:

Student will solve pictograms to name fruits and create pictograms for foods in other Food Guide Pyramid categories.

Outcomes:

Nutrition awareness; creative play

Procedure:

1. Use a copier or scanner to enlarge the box on this page into a worksheet for your PAL. (Note: you can also find this sheet and an answer key on the World Wide Web at <http://151.121.3.25/teanut/Students/kids/fruit2.html>.)
2. Challenge your PAL to solve the pictograms. Review answers and provide help as needed.
3. Talk to your PAL about the U.S. Department of Agriculture's Food Guide Pyramid. Challenge your PAL to create a pictogram for at least one food in each of the food groups—bread, cereal, rice, pasta; vegetables; fruit; milk, yogurt, cheese; meat, poultry, fish and alternatives; and fats, oils, sweets. You do the same!
4. See whether you can solve your PAL's pictogram, and ask him or her to solve yours. Talk about the Food Guide Pyramid and the benefits of healthy eating.

Materials Needed:

- worksheet
- blank paper
- pencils

Time Needed:

About 30 minutes

Related Subjects:

Language arts

Extension:

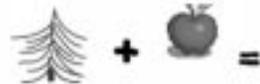
- Bring samples of the pictogram fruits for your PAL to taste.

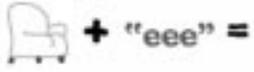
Solutions:

Pineapple; cherries; kiwi; strawberries; pear; nectarine; mango

Fruit Pictograms

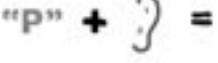
Use the pictures below to figure out which fruits are "spelled out" in pictures.















Source: <http://151.121.3.25/teanut/Students/kids/fruit2.html>

Bring out the “invisible strength” of protein in milk.

■ Objectives:

Student will learn about protein and observe coagulation of protein in heated milk.

■ Outcomes:

Basic nutrition knowledge; observation skill practice

■ Procedure:

1. Talk to your PAL about why our bodies need protein. Discuss good sources of protein in a healthy diet. (See “Discussion Points” for information.)
2. Have your PAL help you pour milk into the pan, then stand away while you use the stove or Bunsen burner. Place the pan over high heat. Heat the milk rapidly, so it coats the sides of the pan. Watch it closely so you don’t burn the milk!
3. When you see a film form on the top of the milk and a heavy coating on the sides of the pan, have your PAL step closer and look. This film and coating is the protein in the milk. At high temperatures, it solidifies.
4. If you want, add cocoa mix to the heated milk, pour slowly into a cup and enjoy!

Materials Needed:

- homogenized whole milk
- saucepan
- stove or Bunsen burner
- cocoa mix and cups (optional)

Time Needed:

About 15 minutes

Related Subjects:

Science (scientific investigation, characteristics of organisms)

Safety Precautions:

Make sure your little PAL stands at a distance when you use the stove or Bunsen burner. Don’t let your PAL reach toward or touch a hot container.

Extensions:

- Visit the grocery store or cafeteria milk case with your little PAL and look up the protein values in different kinds of milk (whole, 2%, nonfat, buttermilk, etc.)

DISCUSSION POINTS

Protein is a nutrient that is essential to life. It is found in many animal, vegetable and synthetic sources. Our bodies use protein to grow, move, reproduce, repair and digest.

Animal foods such as meat, fish, poultry, milk and eggs are rich in protein. Good plant sources of protein are beans, peas, nuts and whole-grain bread and cereals.



Source: “Farm in the School” Teacher’s Resource Guide (Bloomington, Ill.: Illinois Farm Bureau®, 1989).

Show your little PAL the importance of calcium for strong bones.

■ Objectives:

Student will learn about calcium and observe results of leaching calcium out of bones.

■ Outcomes:

Basic nutrition knowledge; observation skill practice

■ Procedure:

1. Talk to your PAL about why our bodies need calcium. Discuss good sources of calcium in a healthy diet. (See “Discussion Points” for information.)
2. Ask your PAL to guess what might happen to bones if they had no calcium in them.
3. Help your little PAL place one of the chicken bones in a jar and cover it with tap water. Place the other bone in a jar and cover it with vinegar. Put lids on the jars.
4. Wait two days. Then, help your PAL remove the bones from the jars for a few minutes. Challenge your PAL to bend the tip of each bone. Talk about what happens. Return the bones to the jars.
5. After another two or three days, help your PAL remove the bones from the jars and dispose of the water and vinegar. Have your PAL try to bend the bones in the middle. Try cutting them with scissors! Talk to your PAL about which bone is softer and why. Explain the problems soft bones can cause in people.

Materials Needed:

- two small jars with lids
- two chicken leg bones
- water
- vinegar

Time Needed:

About 15 minutes, plus follow-up time two days and five days later

Related Subjects:

Science (scientific investigation, characteristics of organisms)

DISCUSSION POINTS

Calcium is a mineral that is essential to life. Our bodies use calcium to build strong bones and teeth, contract and relax muscles, keep nerves healthy and clot blood.

Milk and milk products (like yogurt, cheese and ice cream) are good sources of calcium. So are leafy greens, nuts and small boney fishes like sardines.

Everyone at every age needs to get enough calcium. Calcium makes our bones hard and healthy. If we don't get enough calcium, our bones can become brittle and weak (like the one soaked in vinegar). Weak bones break easily and do not hold up the body. A disease called *osteoporosis* is the result of brittle bones.



Source: *Illinois Ag Mag, Issue 14* (Bloomington, Ill.: Ag in the Classroom, Illinois Farm Bureau®).

Follow the ways of Native Americans to bring out new uses for grain.

■ Objectives:

Student will learn about processing and uses of corn.

■ Outcomes:

Knowledge of past and current food processing methods

■ Procedure:

1. Talk to your PAL about the history of corn. (See “Discussion Points” for information.)
2. Grind corn with your PAL. Place the dried corn kernels inside a canvas bag in a wooden bowl. Take turns pounding the bag (and the corn) with smooth rocks. Keep it up until the corn is completely crushed. This is cornmeal!
3. Make corn pancakes with the cornmeal. Here’s how:
 - Add water to the cornmeal until it is covered. Stir.
 - When the husks rise on top of the water, pour them off with the excess water.
 - Mix the cornmeal with about 1 tablespoon of honey.
 - Form this mixture into a patty. Cook it in the preheated fry pan.
4. As you and your little PAL enjoy your corn pancakes, talk about the many products that are made from processed corn today. (See “Discussion Points” for information.)

Materials Needed:

- large wooden bowl
- canvas bag that you can get dirty
- 1 cup dried corn kernels
- large, smooth rock
- water
- honey
- electric fry pan, spatula

Time Needed:

About 30 minutes

Safety Precautions:

Pay attention so neither your little PAL nor you smashes fingers instead of corn!

Related Subjects:

Social studies (production, distribution and consumption); science (properties of objects and materials)

DISCUSSION POINTS

Corn is a grain native to the American continents. Aztecs, Incas and Mayans were the first to grow corn. Other Native American tribes also grew corn. When the colonists came to America, they learned about corn from the native people. They dried corn and ground it. They used the ground corn, called cornmeal, in porridge, cake and bread. Corn to eat fresh as sweet corn was not developed until the 1700s.

Today, about 60% of harvested corn is fed to livestock, and 25% is exported. Corn flour, cornstarch, cornmeal, corn oil, corn syrup and cereal are all made from corn.

Some other corn products may surprise your little PAL: baby foods, margarine, detergents, sandpaper, chewing gum, de-icers for roads, antibiotics, potato chips, plastics, cosmetics, rubber tires, degradable plastic trash bags and explosives.

Source: Ag in the Classroom, Illinois Farm Bureau®.

Watch yeast's chemical reactions with your PAL.

Objectives:

Student will become aware of chemical reactions between yeast and other bread ingredients.

Outcomes:

Basic food science knowledge; measurement and observation skill practice

Procedure:

1. Explain to your little PAL that yeast is the ingredient that makes bread rise. Yeast is a living organism that interacts with other bread ingredients while the bread is being made. The interaction creates air, which makes the bread dough rise. Baking the dough then kills the yeast.

2. Prepare the yeast comparisons in the sealable plastic bags as follows:

Bag 1: Place 1 package of dry yeast and 200 ml warm water in the bag and swirl gently to dissolve the yeast. Add 2 tablespoons of sugar, seal the bag and swirl gently to mix in the sugar. Set aside in a warm place.

Bag 2: Place 1 package of dry yeast and 200 ml warm water into the bag and swirl gently to dissolve the yeast. Add 10 tablespoons of flour, seal the bag and swirl gently to mix in the flour. Set aside in a warm place.

Bag 3: Place 1 package of dry yeast and 200 ml of warm water in the bag and swirl gently to dissolve the yeast. Add 2 tablespoons of sugar and 10 tablespoons of flour, seal the bag and swirl gently to mix. Set aside in a warm place.

3. With your PAL, look at the bags every 15 minutes for one hour. Challenge your PAL to describe any changes in the color, size and/or looks of each mixture and each bag. Write your PAL's observations into a chart like the one here.

4. Look at the three bags and the results on your PAL's chart. Ask your PAL to decide which results show the best combination of ingredients to make bread rise.

Materials Needed:

- three packages dry yeast
- three quart-size sealable freezer bags
- sugar
- flour
- warm water
- tablespoon measure
- graduated cylinder

Time Needed:

About 15 minutes for preparation of experiment, then one hour for follow-up observations

Related Subjects:

Science (scientific investigation, characteristics of organisms)

Time	Bag 1— Yeast + Sugar	Bag 2— Yeast + Flour	Bag 3—Yeast + Sugar + Flour
15 min.			
30 min.			
45 min.			
60 min.			

Source: *Everyday Life Science* (Torrance, Calif.: Frank Schaffer Publications, Inc., 1997).

The Triton Central FFA Chapter, Indiana, taps creativity in their little PALS with this fun activity.

■ Objectives:

Student will learn about cereal processing and packaging.

■ Outcomes:

Basic food processing knowledge; analysis; manual skill practice

■ Procedure:

1. Give your little PAL one empty cereal box. Ask your PAL to cut it apart into pieces that serve different functions. (You might give hints: the liner keeps the cereal fresh; the front panel makes people want to buy the cereal; the side panels carry the government-mandated food labels; etc.) Challenge your PAL to explain why the package is built and decorated the way it is.
2. Have your PAL design a whole new cereal. Your PAL should decide what the cereal will look like and taste like, and what it will be made from.
3. Give your PAL another empty cereal box and materials to cover it. Then, your PAL can decorate the package for his or her new cereal. The box has to include a front panel that gets attention, a side panel with a food label and a game related to the cereal on the back.
4. Have your PAL present a 15-second commercial that uses the box to promote the cereal. Applaud your PAL's creativity!

Materials Needed:

- two empty cereal boxes
- construction or butcher paper
- tape and glue
- scissors
- markers, sparkle glue, colored paper and other materials to decorate a box

Time Needed:

About 30 minutes

Safety Precautions:

Depending on your little PAL's age, you may need to be the one to use the scissors.

Related Subjects:

Language arts; social studies (production, distribution and consumption); visual arts

DISCUSSION POINTS

Breakfast cereal is an important, affordable source of nutrition for most Americans. The combination of cereal and milk provides protein, essential B vitamins and minerals. Many processed cereals are fortified with additional vitamins and minerals. Oats, wheat, corn and rice are the grain crops most often used in breakfast cereals.

Cereals are also big business. Americans buy 2.7 billion packages of cereal each year and spend almost \$9 billion on them. Ready-to-eat cereals like the ones we consume today were first developed in the late 1800s.

Source: Adapted from Triton Central FFA Chapter, Indiana.

Help your little PAL understand common liquid measurements.

■ Objectives:

Student will compare liquid volume measurements.

■ Outcomes:

Prediction practice; measurement practice; awareness of relative volume measurements

■ Procedure:

1. Show your PAL the four empty liquid containers. Have your PAL line them up, from the one that holds the least to the one that holds the most.
2. Challenge your PAL to predict how many of each small container will fit into the next larger container. (For example, "How many pints are in a quart?") Have your PAL write down these predictions.
3. Have your PAL fill the pint container with water and pour it into the quart container. Your PAL should continue to fill and pour to test all the predictions. How did your PAL do with predicting the relative volumes?
4. Review the equivalent liquid measures with your PAL. Challenge your PAL to learn and remember these by the next time you meet.

Materials Needed:

- empty liquid containers: pint, quart, half-gallon, gallon
- one-cup liquid measure
- water

Time Needed:

About 30 minutes

Related Subjects:

Mathematics; science (scientific investigation, measurement)

Extensions:

- With your little PAL, compare the liquid measurements below with liquid measurements in the metric system. List measures that are similar (like liters and quarts).
- With your little PAL, compare liquid and dry measures. Does one cup of liquid fit into a dry measuring cup? Vice versa?

LIQUID MEASURE EQUIVALENTS

2 cups = 1 pint

2 pints = 1 quart

2 quarts = 1/2 gallon

4 quarts = 1 gallon

Create a green-haired “character” with your PAL.

Objectives:

Student will learn what is needed for plant growth, exercise artistic creativity and observe change over time.

Outcomes:

Basic plant science knowledge and awareness; creative expression

Procedure:

1. Have your little PAL use the spoon to scoop out a small area at the top of the potato. It should be just big enough to hold the cotton ball.
2. Ask your PAL to decorate the potato to look like a big face with ears and arms. Help your PAL use the scissors and stick on the face and body features with toothpicks.
3. Cut the bottom of the potato off flat so the “potato head” stands up.
4. Moisten the cotton ball and place it in the scooped-out spot on the head. Sprinkle on enough grass seeds to cover the cotton ball.
5. Place the potato in a warm, sunny place. Have your PAL water it every day, just enough to keep the cotton ball moist, but not soaked. In two or three days, the seeds will sprout and begin to grow. As the grass grows, your PAL can even give the “fuzzy potato head” a haircut!
6. Talk with your PAL about what plants need to grow—water, nutrients and light. Plants outside get their water from the rain, their nutrients from the soil and light from the sun. Where is the “fuzzy potato head” hair (grass) getting its nutrients? From the potato! People also get important nutrients from potatoes when we eat them.

Materials Needed:

- 1 large potato, washed
- spoon
- construction paper
- scissors
- toothpicks
- 1 large cotton ball
- 1 teaspoon of quick-growing grass seeds
- water
- knife

Time Needed:

Approximately 30 minutes to decorate and “plant” potato; additional follow-up time three to five days later

Safety Precautions:

Depending on your little PAL’s age, you may need to be the one to use the scissors.

Related Subjects:

Science (characteristics of organisms); visual arts

Extension:

- Try similar combined art/science projects by planting quick-growing seeds like grass, mustard or parsley in emptied and decorated egg shells, egg cartons, milk cartons or margarine containers. Seeds will also sprout in shapes cut out of sponges or “planted” on paper towels. See the PALS Activity Handbook, Volume I and additional resources for instructions. (See pages 82-83 for resource information.)



Amaze your PAL with how much a plant will do to grow toward the sunlight.

■ Objectives:

Students will plant and cultivate seeds, then observe the effects of changing light source direction.

■ Outcomes:

Basic plant science knowledge; observation practice

■ Procedure:

1. With your PAL, fill the jar about halfway with soil or sand. Insert one or two seeds halfway down in the jar, next to the glass. Add a little water. Close the jar with a water-tight lid.
2. Set the jar upright in a sunny window. Check daily, until the seeds send out roots and shoots. Show your PAL how the plant is growing. Have your PAL draw a picture of the plant in the jar.
3. Now, lay the jar on its side. Check growth daily. In a day or two, the roots will turn to grow down and the new top growths will grow up. Show your PAL, and ask why he or she thinks this is happening. Have your PAL add the plant's new growth to his or her earlier picture.
4. Turn the jar upright again. Wait and observe how the plant grows. (Each time you turn the jar, the roots and stems will turn, also.) Have your PAL draw each new growth.
5. Talk about how light affects garden and landscaping plants and field crops. Have your PAL check the weather reports for how much sun is expected in the next five days. See if your PAL can guess how this might affect growing plants.

Materials Needed:

- glass jar with water-tight lid
- soil or sand to fill jar half full
- 1-2 bean or corn seeds

Time Needed:

Approximately 30 minutes for initial planting; additional brief follow-up times in succeeding days

Related Subjects:

Science (characteristics of organisms, making observations); visual arts

Extensions:

- Do the same activity with several jars. Place the jars in different lighting situations, such as a dark closet with no light, a window sill and a spot that receives only artificial light. Observe what happens to each plant.
- Take a walk in the woods with your PAL and look for plants and trees that have grown at strange angles to reach the sun.

Source: "Farm in the School" *Teacher's Resource Guide* (Bloomington, Ill.: Illinois Farm Bureau®, 1989).

Show your PAL a great “real world” use for basic math skills.

Objectives:

Student will calculate perimeters and areas and learn how such information is used in gardening and other plant cultivation.

Outcomes:

Addition and multiplication practice; awareness of yields

Procedure:

1. Create a worksheet that shows the outline of several imaginary “garden plots.” Use the dimensions provided in “Discussion Points” when drawing the plots.
2. Have your PAL measure and write down the lengths of the sides of each box. Explain how to figure out perimeter and area. Have your PAL calculate perimeter and area for each “garden” on the sheet.
3. Look on the seed packages for information about how many seeds should be planted in an area. Talk about why gardeners and farmers need to know the perimeter and areas of their fields so they can plan what and how much to plant.

Materials Needed:

- worksheet
- ruler
- pencil
- calculator (if used in student’s classes)
- seed packets for variety of flowers and vegetables

Time Needed:

30-45 minutes

Related Subjects:

Mathematics (addition, multiplication); science (organisms and their environments)

Extension:

- Take your PAL outside and measure some real garden plots or landscape beds.

Solutions:

(“P” means perimeter; “A” means area)

#1 P=12"; A=5 sq. in.; #2 P=10"; A=6 sq. in.;
#3 P=7"; A=3 sq. in.; #4 P=8"; A= 3 sq. in.;
#5 P=4"; A=1 sq. in.

DISCUSSION POINTS

Use the following dimensions to create a worksheet that shows “garden plots.”

#1	5" x 1"
#2	2" x 3"
#3	2" x 1.5"
#4	1" x 3"
#5	1" x 1"

Perimeter is figured by *adding* all the side lengths.

Area is figured by *multiplying* the length of one short side times the length of one long side.



Source: Adapted from *Kansas Kids Connection* (Manhattan, Kans.: Kansas Foundation for Agriculture in the Classroom, Fall 1998).

Conduct an experiment to show your little PAL what happens when a plant is blocked from the sun.

■ Objectives:

Student will conduct a simple experiment and observe the influence of sunlight on plant growth.

■ Outcomes:

Awareness of photosynthesis

■ Procedure:

1. With your PAL, plant fast-growing seeds in soil inside a shallow round container. Water them and set in a sunny windowsill.
2. Help your PAL cut a cardboard circle the same size as the container's rim. Then, cut out a smaller circle or other simple shape (like a triangle or star) in the center of the cardboard circle. Leave about one inch of border around the cut-out shape. Place the cardboard circle over the top of the planted container.
3. Leave the seeds to sprout and grow. Have your PAL check the soil each day and add just enough water to keep it damp.
4. After five days, have your PAL remove the cardboard ring. Ask your PAL to describe what he or she sees. (The plants covered with cardboard will be white and stunted, while the plants that received sunlight through the cut-out will be green and healthier.)
5. Talk about how plants use sunlight. (See "Discussion Points" for information.)

Materials Needed:

- empty, clean margarine container (or other round, shallow container)
- soil
- fast-growing seeds (like cress, alfalfa, radishes, etc.)
- water
- lightweight cardboard or poster board
- scissors

Time Needed:

30 minutes, 5 days of growing time, 10 minutes for follow-up

Safety Precautions:

Depending on your little PAL's age, you may need to be the one to use the scissors.

Related Subjects:

Science (characteristics of organisms)

DISCUSSION POINTS

Plants need sunlight for a process called *photosynthesis*. During photosynthesis, the sun's energy is converted into chemical energy that the plant can use to grow.

Chlorophyll is an important part of this process. It is the substance that makes plant leaves green. The parts of the plant that do not receive sunlight lack chlorophyll in their leaves.

Teach your PAL a way to preserve flowers to enjoy all year round.

■ Objectives:

Students will collect and dry flowers, then create art projects with the results.

■ Outcomes:

Basic flower identification; preservation awareness

■ Procedure:

1. Obtain permission to take your little PAL for a walk. On the walk, have your PAL find and collect several small flowers, such as violets, buttercups, daisies, pansies or even dandelions.
2. Lay out all the flowers and have your PAL identify ways the various flowers are alike and ways they are different.
3. Place the flowers inside sheets of paper towel, then inside many layers of newspaper. Put a heavy book on top.
4. Have your PAL check the flowers in a few days to see if they are completely dried out. If not, put the book back and wait until they are dry.
5. Help your PAL use the dried flowers to decorate greeting cards, placemats, pictures and more. Talk about the ways flowers are used. Show your PAL pictures of large commercial flower fields and greenhouses. Emphasize that flowers are part of agriculture.

Materials Needed:

- small flowers
- paper towels
- newsprint
- heavy book(s)

Time Needed:

About 45 minutes to collect and prepare flowers to dry; additional time to use dried flowers as decorations

Related Subjects:

Science (characteristics of organisms, life cycles of organisms, classification); visual arts

Extensions:

- With your PAL, investigate how flowers are dried commercially for dried-flower arrangements.
- Look in a field guide to identify flowers related to the ones your PAL collects.



Help your PAL preserve leaves to use in art projects and room decorations.

■ Objectives:

Student will collect, preserve and decorate with leaves.

■ Outcomes:

Measurement practice; basic plant science knowledge; basic tree identification knowledge; creative expression

■ Procedure:

1. Take a walk with your PAL and collect colorful leaves and small branches. Talk about the different kinds of leaves and trees.
2. Back at school, spread the leaves out on newspaper. Help your PAL use the hammer to lightly pound the ends of the leaf stems and branch ends. (This allows the leaves to absorb water.)
3. Have your PAL measure 2-1/4 cups warm water and pour it into the jar. Measure 3/4 cup of glycerine and add it to the water. Screw the top on tightly. Have your PAL shake the jar to mix the water and glycerine.
4. Take off the jar top and help your PAL stick the leaves and branches into the water. Set the jar in a safe place for about a week.
5. After a week, have your PAL describe how the leaves have changed. They will be soft and pliable. Explain that the leaves absorbed the water and glycerine. As the water evaporated, the glycerine changed the leaves. They will stay this way from now on. Take the leaves out of the glycerine mixture and dry off the ends. Help your PAL make a wreath, computer monitor frame or other art project with the preserved leaves.

Materials Needed:

- variety of leaves and small branches
- newspaper
- lightweight hammer
- large covered jar
- glycerine (available at pharmacies)
- hot water
- liquid measuring cup

Time Needed:

About 45 minutes, plus follow-up time for art project

Safety Precautions:

Pay attention so neither your little PAL nor you smashes fingers instead of stems and branches!

Related Subjects:

Science (characteristics of organisms); visual arts

Extensions:

- Help your PAL create centerpieces, cards and gifts with the preserved leaves.
- Visit a greenhouse or florist with your PAL to observe professional floral preservation.

DISCUSSION POINTS

Glycerine is a colorless, syrupy liquid obtained from fats or made synthetically. It is often used in familiar products, including cosmetics and chewing gum. It is also used in industrial processes.

The Suwannee FFA Chapter, Florida, teaches PALS to appreciate the “stories” hidden inside trees.

■ Objectives:

Students will observe growth rings in a log cross-cut, learn about how trees grow and create a “tree timeline” reflecting their own life events.

■ Outcomes:

Basic forestry knowledge; estimating practice; charting practice

■ Procedure:

1. Let your PAL look at, lift and feel the log cross-cut. What can your PAL guess about the tree based on this “slice” of it?
2. Share the “Discussion Points” on this page with your PAL. Then, look at your log cross-cut together. Try to identify the rings that represent the year your PAL was born and the year you were born.
3. Give your PAL the paper plate to draw circles representing the years in his or her life. On this “tree timeline,” have your PAL mark special events like the year he or she started school, when brothers or sisters were born, the first time to ride a bike alone, etc.

Materials Needed:

- cross-cut “slice” of a log and knowledge of what year the log was cut
- paper plate
- colored pencils or markers

Time Needed:

About 30 minutes

Related Subjects:

Science (life cycle of organisms, observation); social studies (time, continuity and change)

Extension:

- If possible, have your PAL measure and write down the log cross-cut’s weight, height, circumference and diameter.

DISCUSSION POINTS

Each growth ring in a tree trunk represents one year. Looking at the cross-cut of a log, we can see how much the tree grew each year. The center part is the hardest wood and takes the longest to grow.

You can calculate the age of a tree by counting the number of rings. Start at the outside and count in to the center. If you know what year the tree was cut down, you can calculate what year it started growing.



Source: Paper plate idea submitted by Sadie Pettrey, Suwannee FFA Chapter, Florida.

Introduce your PAL to basic forestry data gathering.

■ Objectives:

Student will learn to estimate a tree's height and measure its circumference.

■ Outcomes:

Measurement skill practice; calculation skill practice

■ Procedure:

1. Choose a medium-size tree on the school grounds. Have your little PAL "get to know" the tree by feeling it, smelling it and looking at it closely.
2. Help your PAL estimate the height of the tree. Stand with your PAL next to the tree. While you stay there, have your PAL take the pencil and walk away 20 paces. Your PAL will estimate the height of the tree by comparing it to your height.
3. Tell your PAL to hold the pencil out at arm's length, then cover part of the pencil until the visible part is the same length as you appear to be. Next, your PAL moves the pencil up the tree to see how many times taller the tree is than you. Have your PAL tell you the number of times the uncovered part of the pencil (representing your height) "fits" before the tree top.
4. Help your PAL calculate the estimated tree height. Start with your height. Multiply it times the number of times the pencil "fits" the tree. This gives a good estimate of the tree's height.
5. Help your PAL use the tape measure to measure around the tree (its circumference). Tree circumference is usually measured at about chest height.
6. Talk about why tree size is important information used by foresters, landscapers, researchers and others.

Materials Needed:

- pencil
- paper
- calculator (optional)
- flexible tape measure

Time Needed:

About 45 minutes

Related Subjects:

Mathematics (multiplication); science (measurement)

Extension:

- Collect information from several PALS measurements to create a data base of all the trees on the school grounds. In future years, PALS can compare new information to the history in the data base.

DISCUSSION POINTS

Estimated Tree Height = your height times the number of times pencil appears to "fit" in tree.

Example:

You are 65 inches tall.

Your PAL finds the tree is about four times taller than you.

Calculate the tree height by multiplying 65 times 4. The answer is 260 inches.

Divide by 12 to find the number of feet (approximately 21 feet, 8 inches). This is the tree's estimated height.

Source: http://willow.ncfes.umn.edu/lab_exercises/How_big_is_a_tree.htm

Surprise your PAL by collecting water from a tree leaf that's not wet.

Objective:

Student will observe the process of transpiration in leaves.

Outcomes:

Plant science knowledge; measurement skill practice

Procedure:

1. Go outside with your PAL and find a tree that receives good sunlight several hours a day. Find an average-size leaf that you can reach.
2. Place the pebbles in the plastic bag and close it around the leaf. (Leave the leaf on the tree!)
3. Leave the bag with pebbles hanging around the leaf for 24 hours.
4. After 24 hours, carefully remove the bag. There will be water with the pebbles. Make sure none of it spills out! Talk to your PAL about where this water came from. (See "Discussion Points" for information.)
5. Take the bag with water inside. Remove the pebbles. (Try not to remove any water with them.) Pour the water into a graduated cylinder. Have your PAL write down the number of milliliters (ml) collected from a single leaf. How much water might a whole tree of leaves give off?
6. Talk to your PAL about how trees (and other plants) affect the air by giving off water and oxygen and using carbon monoxide. Explain that plants influence temperature, humidity and air quality in many different settings.

Materials Needed:

- quart-size sealable plastic bag
- several small, clean pebbles
- graduated cylinder (from the science lab)

Time Needed:

10 minutes, then 24 hours waiting time, then 20-30 minutes follow-up and discussion

Related Subjects:

Science (measurement with instruments, organisms and their environments)

Extension:

- Have your PAL measure and compare the temperature and the humidity in a forested area and in an area with few trees.

DISCUSSION POINTS

In a process known as *transpiration*, water is constantly evaporating from leaves into the air. Water enters the tree at its roots and moves up through the plant. When the water is released into the air, it leaves a "hole" that the tree fills by taking in more water.

This experiment captured the water in your little PAL's plastic bag instead of letting it mingle into the air.





Partners in Active Learning Support

TIPS, IDEAS AND REFERENCES

Seasonal Activities
Activities with Parents
Team Building
Field Trips
End-of-Year Activities
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Enjoy the fun of long-lasting pumpkin decorations without worrying about using a sharp knife with your little PAL.

■ Procedure:

1. Help your PAL wash the pumpkin or gourd and dry it thoroughly. Place the pumpkin and decorating items on a newspaper-covered surface.
2. Have your PAL draw or paint a face on the pumpkin or gourd. Then, challenge your PAL to be as creative as possible in adding hair, a beard, teeth, hats, glasses, etc. You can glue items to the pumpkin or attach them with straight pins.
3. Display the decorated pumpkin in your PAL's classroom or the agriculture labs.

Materials Needed:

- pumpkin or gourd
- permanent, felt-tipped marking pens or acrylic paints and paintbrushes
- “found” items to decorate the pumpkin (buttons, seeds, string, ribbons, bows, colored paper, stickers, cotton balls, candy, dried leaves, fabric scraps)
- glue
- straight pins
- newspaper

Time Needed:

30-45 minutes

Safety Precautions:

Make sure your little PAL handles the pins safely.

DISCUSSION POINTS

Pumpkins are more than decorations! Pumpkin is a fruit that is high in fiber and provides vitamins A and B, as well as the nutrient potassium.

Many foods are made with pumpkins. Pumpkin seeds are eaten as snacks and used in breads. The pumpkin flesh is cooked and pureed to go in pies, custards, soups, muffins and more.



The Allentown FFA Chapter, New Jersey, created a holiday wreath with their little PALS. It's a great way to celebrate and publicize the PALS program.

■ Procedure:

1. Have each PAL (little and big!) trace and cut out his or her hand from green construction paper. Each PAL writes his or her name on the hand cut-out.
2. Staple the hands around a large circle to make a wreath form. (This might be on a bulletin board, banner or cardboard cut-out.)
3. Have PALS decorate paper holiday ornaments. Play holiday music while they color and decorate the shapes in whatever way they wish. Once the ornaments are finished, big PALS help little PALS staple or tape them to the wreath.
4. Add a giant paper or ribbon bow for decoration. Display the wreath in school for everyone to see. Hand out candy canes at the end of the activity.

Materials Needed:

- giant wreath form/circle
- green construction paper
- scissors
- ornament cut-outs on various colors
- crayons or markers
- stapler
- tape

Time Needed:

About 30 minutes

Safety Precautions:

Depending on your little PAL's age, you may need to be the one to use the scissors.



Source: Submitted by Liz Lustgarten, Allentown FFA Chapter, New Jersey.

The Spencer FFA Chapter, Wisconsin, made valentine magnets with their little PALS. It's a fun take-home project that exposes youngsters to the idea of magnetism.

■ Procedure:

1. Copy the shapes on this page to make patterns.
2. Help your little PAL cut out the patterns, then trace them onto craft foam.
Here's what to cut:
 - one larger heart shape from white foam
 - two smaller heart shapes from red foam
3. Have your PAL look at the diagram and gather the items he or she will use to decorate the magnet. (In addition to collecting two eyes, a black pom-pom and two white pom-poms, your PAL will need to cut a tiny tongue out of pink foam.)
4. Help your PAL glue together the pieces to make the valentine magnet.
5. Talk about the meaning of Valentine's Day and why it is important to express caring for our families, friends and others. Have your PAL take the magnet home as a valentine for his or her family.

Materials Needed:

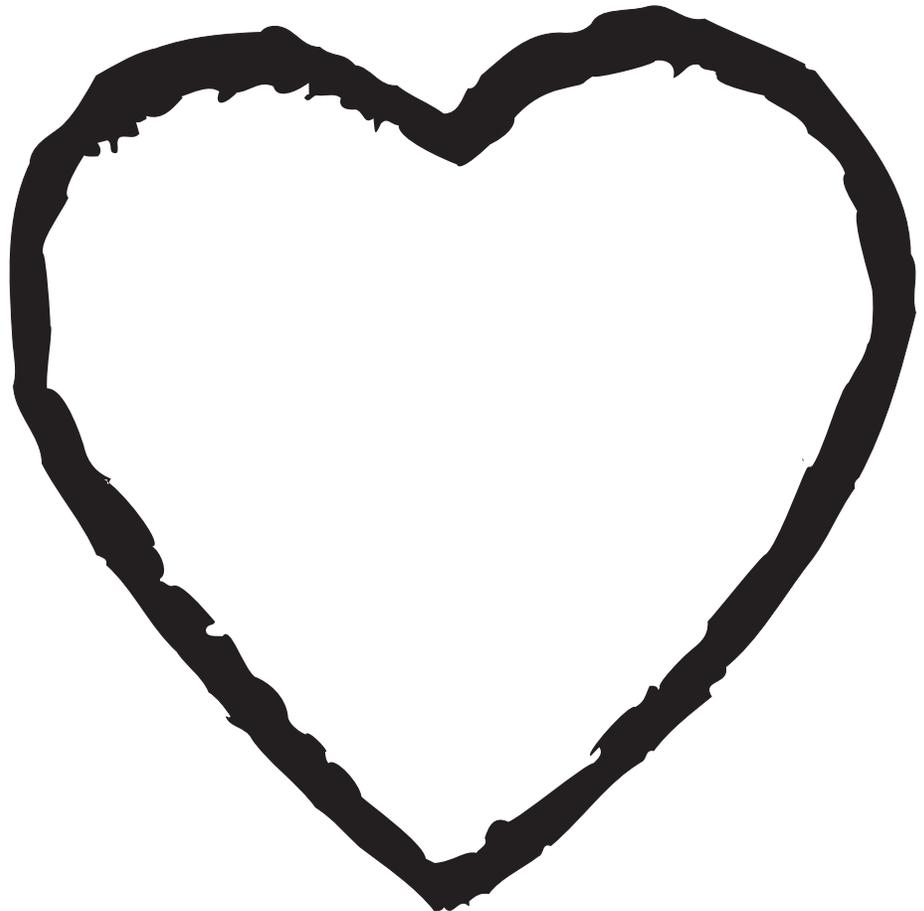
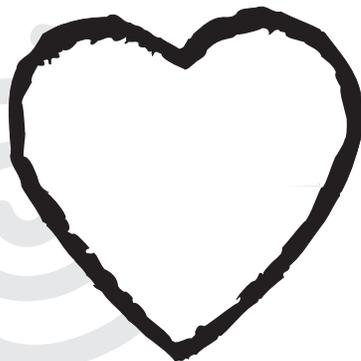
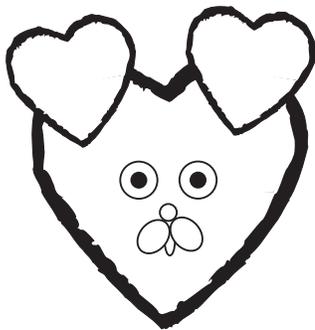
- white, red and pink craft foam
- heart patterns (copied and cut from shapes on this page)
- small (1/4") black pom-poms or small cotton balls painted black, then dried
- small (3/4") white pom-poms or small white cotton balls
- glue-on eyes
- small, flat magnets
- scissors
- glue

Time Needed:

About 20-30 minutes

Safety Precautions:

Depending on your little PAL's age, you may need to be the one to use the scissors.



Source: Submitted by Spencer FFA Chapter, Wisconsin.

Events that involve PALS parents bring added recognition and support to your little PAL and your PALS program. Here are some ideas and tips for successful activities with parents.

■ Ideas

- Meet with PALS parents at an elementary school open house or back-to-school night. If appropriate, set up special displays of PALS projects for all parents to admire.
- Host a session for parents to inform them about PALS, have them meet big PALS and explain what you will be doing with their children and why.
- Send home “products” and information with little PALS after each activity.
- Ask parents along on field trips and fun events.
- Host a holiday party for PALS and parents.
- Sponsor a family fun night with team-building activities for PALS and their families.
- Invite PALS parents to the annual FFA chapter banquet.
- Distribute a special “freebie” to PALS parents who stop by the FFA chapter’s fair booth.
- Invite PALS and their families to a picnic with “ag olympics” games. Set up fun activities like hobby horse and wheelbarrow races, milk drinking contest, agricultural obstacle course, egg toss and more.

■ Great idea:

The Spencer FFA Chapter, Wisconsin, invites PALS and parents to a reception with food and crafts for 45 minutes before the start of the elementary school’s holiday concert.

Tips

- Compliment parents for the great qualities you love about your little PAL.
- Show parents samples of what their child has done through PALS. Point out how much their child has learned and advanced in the time you have known him or her.
- Let parents know that you respect them and value their involvement as the “experts” about their children.
- Help parents be comfortable in the school. You might set up a scavenger hunt for parents to find where their child hangs his or her coat, eats lunch, reads books, etc.
- Think about social, economic, language or cultural barriers that may prevent parents from participating or make them uncomfortable in the school. Be creative with solutions—provide a variety of meeting times for parents who work at night, hold activities in a neighborhood park, avoid language that suggests every child lives with both parents, etc.
- Invite parents to be part of PALS activities whenever they would like. Tell them whom to call to become involved.

Active games help you build PALS relationships while having fun! Here's an example from the Atwood High FFA Chapter, Kansas.

In this "Toxic Waste" activity, five PALS pairs team up to transport balls from one can to another. The team will need to work out a plan in advance! You need to figure out a way to get the balls from the can they are in to a designated empty can.

■ Procedure:

1. Before beginning, tie a secure knot in one end of each rope. Thread the unknotted end out through one of the coffee can holes. Place the small balls inside this can. Place the empty can some distance away. Create an obstacle course of chairs, tables, etc. between the cans. (The activity works great outdoors, where the obstacles can be trees, shrubs, benches, etc.)
2. Set the scene. Describe a scenario in which the cans contain toxic waste that must be moved through the terrain and dumped in the other container.
3. Allow the team a few minutes to develop a plan. (No practicing allowed!)
4. Have five participants put on blindfolds (this might be all the little PALS, all the big PALS or a mixture). These people will carry the can using the ropes. The other five will give instructions.
5. Position the blindfolded PALS at the rope ends. Have them pull the ropes to lift the can off the floor. They will need to keep the ropes taut so that the can stays off the floor and does not tip over and spill the balls.
6. Using only verbal communication, the PALS who can see must guide the blindfolded rope holders through the obstacle course. Once in position near the empty can, the communicators verbally instruct the rope holders to tip the balls into the empty can.
7. After the team has succeeded (or given up!), allow the rope holders to remove their blindfolds. Ask team members to talk about problems they encountered. What communication problems arose? How did they figure out the way to empty the can? Did someone take charge and lead the group? Were all ideas considered? Discuss how similar challenges might be worked through in your PALS' program.

Materials Needed:

- empty 3-pound coffee can punched around the top rim with five evenly spaced holes
- another empty 3-pound coffee can with no holes
- several small bouncy balls (like super balls, golf balls, etc.)
- 5 lengths of rope at least 5' long (the longer the rope, the harder the activity)
- five blindfolds

The Triton Central FFA Chapter, Indiana, emphasizes teamwork and creativity by building and flying kites with their little PALS.

■ Procedure:

1. Help your little PAL glue the skewers together in a cross shape. The horizontal skewer should be glued one-fourth of the way down the vertical skewer.
2. Cover the frame with the cloth or plastic. Attach it with tape.
3. Connect the string to the lower end of the kite.
4. Have your PAL decorate the kite. Little PALS might want to use decorations that show how they feel about being in the PALS program.
5. Go fly the kite with your PAL!

Materials Needed:

- two 30-cm. bamboo skewers with sharp points cut off
- glue
- tape
- lightweight cloth or plastic to cover the frame
- roll of string
- markers or paints

For detailed kite instructions see:

http://users.bigpond.net.au/aka/darebin/168_9.gi



Source: Submitted by Matt Taylor, Triton Central FFA Chapter, Indiana

Team-Building Resources

Here are a few books that provide directions for active learning games. Be sure to ask elementary teachers and community parks/recreation programs for recommendations. Also check in school and public libraries and on the web under the topic “cooperative games.”

Activities That Teach and *More Activities That Teach* by Tom Jackson, M.Ed. (Distributed by Educational Media, Inc.)

Leadership Lessons—50 Lesson Plans for Teaching Leadership Concepts and Skills (Published by National Association of Secondary School Principals)

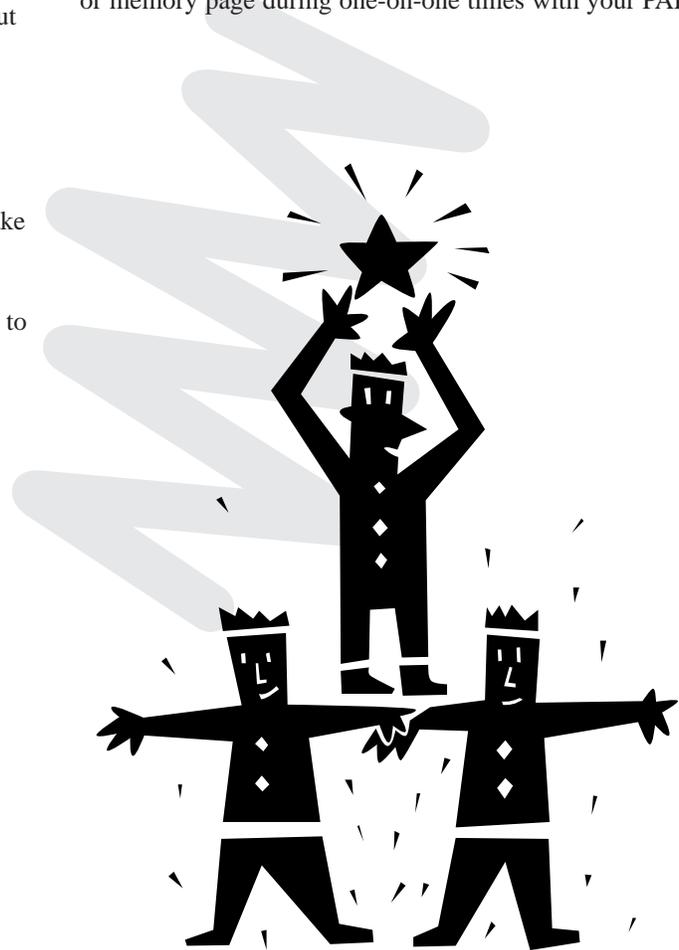
Tips for Team-Building Activities

- Remember, safety first. Choose activities to match the physical skills and maturity of your little PALS. Then, watch the action carefully to make sure no one gets hurt.
- Let everybody win. Some friendly competition can be fun, but the idea is to get everyone working and learning together. PALS are at an age when competition and performance can cause a lot of stress. Don't make a big deal about “beating” others.
- Plan the activity carefully. Collect all needed materials to make the group session run smoothly.
- Use team-building activities as a way for little and big PALS to get to know one another in a group setting.

From Teams to Twos

Try these ideas for carrying the fun and togetherness from team-building activities into your one-on-one PALS pair.

- Make sure you participate in group activities right alongside your PAL. That gives you a common experience to talk about later.
- Talk over the activity with your PAL. What did he or she feel and learn? Together, think of ways the same feelings and lessons might help in other situations. Examples are tackling a homework problem or getting along with a sibling.
- Look for the chance to draw a parallel between the team-building activity and one-on-one lessons. For example, you might say, “Remember how we had to use whatever materials we had when....? Doing this experiment is a lot like that.”
- Take photos during group activities. Later, create a scrapbook or memory page during one-on-one times with your PAL.



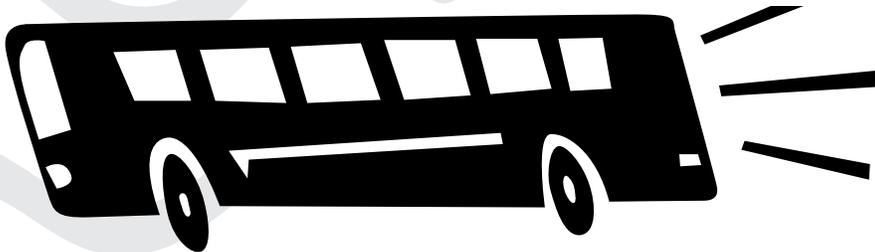
Open the world outside the school to your PALS with trips to agriculture-related places.

Ideas for Places to Visit

- agricultural equipment dealer
- animal groomer
- animal ranch
- animal shelter
- botanical gardens
- college or university agricultural labs
- crop farm
- dairy farm
- dairy processing plant
- fish hatchery
- game farm
- golf course
- greenhouse
- library
- livestock auction
- managed forest
- orchard
- restaurant kitchen
- TV or radio station with agricultural programming
- veterinarian's office
- wildlife park
- zoo

Field Trip Tips

- Plan far in advance. Work with elementary teachers and administrators to follow school rules. Find out about transportation policies, parental permission slips, insurance coverage and more.
- Make a name tag for each little PAL. Include a contact phone number in case one PAL is separated from the group.
- Choose destinations and activities that are right for the ages of your PALS. Look for places where they will be safe, can understand what is going on and will have fun.
- Prepare little PALS for the experience. Go over the plan for the field trip, and answer their questions about it.
- Never leave any PALS (elementary or high school) alone with someone who is not part of your group.
- Expand on the experience with follow-up activities. Have both big and little PALS write reports or give presentations on what they did, saw and learned.



“Dear Me”

Writing letters is a good way for you and your little PAL to learn about yourselves and each other. This activity pays off at the end of the year, but start it when PALS pairs begin!

Create full-size letters using the fill-in sentences in the samples here. Or, make up your own fill-ins. Ask your PAL to complete the little PAL letter while you fill in the big PAL letter. If you want, share your letters with one another. Then, seal the letters into envelopes. Put them in a safe place so you can find them later. (Maybe your PALS coordinator or FFA advisor would hold onto them for you.)

Later, bring the letters to one of the last sessions with your PAL. Read and discuss the letters with one another. Have you moved closer to some of your hopes and dreams? What can you do in the future to achieve even more? Talk about the ways you have both learned and grown during your PALS pairing. If you want, write new letters that tell about your thoughts and feelings now.

You might even want to save your mentee’s letter and address. Two or three years from now, mail the letter to your PAL. Include a note saying you hope he or she is still learning, growing and reaching dreams.

PALS Keepsakes

The Wapsie Valley FFA Chapter, Iowa, tries to keep PALS pairs together from year to year, but it’s not always possible. To help pairs say goodbye, the chapter holds a session when pairs make something that will help them remember the year. The chapter’s PALS have made buttons, painted t-shirts and tie-dyed t-shirts.

Saying Goodbye

It may be difficult for your little PAL to be “left behind” at the end of the school year. To help your PAL cope with the separation, talk about what you will be doing over the summer and/or next fall (especially if you will be starting college). Ask about your PAL’s plans, too.

All the big PALS might make small mementos to leave with little PALS. A small, framed photo of each PALS pair is a good choice.

Agree to write to each other, and specify how often. Once you have promised, be sure to write to your little PAL. After a while, ask if your PAL would rather stop writing. As your PAL becomes involved with new activities and friends, it may be time to “let go.”

Creative Endings

Tap your little PAL’s creativity to put a “finishing touch” on your time together. Have your little PAL write a poem or song, create a picture or sculpture, act out a skit or complete a scrapbook about their experiences in PALS. You do the same, and present the result to your little PAL as a keepsake.

Little PAL Letter

Dear Me:

How are you? I am fine. My PALS mentor is named _____. The thing I like best about my mentor is _____.

My mentor is helping me to _____ this because _____. I like _____.

As a PAL, I hope to learn about _____ and be able to do things like _____.

I like how _____ my mentor is. I want my mentor to help me to be like that. It would help me _____.

When you read this, I hope to be more _____ and know more about _____. Let me know how it turns out!

Sincerely,
Me

Big PAL Letter

Dear Me:

Wow! Can you believe how quickly the weeks have passed since I wrote this?! My PALS mentee is named _____. So far, one of the many things I like about my mentee is _____. I like how _____ my mentee is.

I am helping my mentee to _____.

At the same time, my mentee is teaching me to _____. This can help me in other parts of my life, like _____.

Others things I am learning in PALS include _____. These are important lessons because _____.

When you read this, I hope to be more _____ and know more about _____. Let me know how it turns out!

Sincerely,
Me

Source: “PALS Keepsakes” submitted by Debbie Kleitsch, Wapsie Valley FFA Chapter, Iowa

Social Skills

Little PALS learn to get along in the world by watching and interacting with big PALS. Here are some skills you can use yourself and encourage in your little PAL.

Grow a Friendship

Getting to know someone new is a big part of PALS. You can set a great example the very first time you meet your little PAL. Here are some suggestions.

- Smile. People like meeting a warm, friendly face.
- Speak clearly and slowly enough to be understood, using words your PAL will understand.
- Look your PAL in the eye. You may want to sit or kneel so you're at eye level with your PAL. Make sure your PAL can tell you're focused on being together.
- Repeat your PAL's name and introduce yourself. You might say something like, "It's really good to meet you, Ryan. My name is..." Offer to shake hands.
- Do something together. The easiest way to become friends is to work together on an activity. That way you have something to talk about. Other topics will come naturally.
- Listen. When your PAL talks, pay attention. Ask questions to learn more. Repeat what your PAL says (in your own words) to show you understand.
- Give it time. It may take several meetings before a friendship starts to bloom. Stay positive. Set a good, friendly example for your PAL.

Model Manners

Children learn by example! Make sure you set a strong example by using good manners with and in front of your little PAL. Remember to—

- say "please" when making a request and "thank you" when you receive a response;
- refrain from all cursing and vulgar language, and ask your little PAL not to use words like that if he or she uses such language;

- take turns and wait in line patiently;
- play fair;
- apologize when you make a mistake or do something wrong;
- call adults by "Mr." or "Ms.";
- show respect for teachers, other school personnel and parents;
- learn and practice good skills for answering the phone and introducing people to one another.

Cultivate Caring

When children help others, they help themselves. As an FFA member, you know the important lessons learned through community service—respect for others, tolerance, citizenship, problem solving and other life skills. Here are some ideas for how to involve your little PAL in caring about and serving others.

- Choose activities you and your PAL can complete together (like making crafts or growing flowers), then give to someone in need.
- Find storybooks that show the benefits of helping others. Read and discuss them with your PAL.
- Explore ways your PAL already helps out in his or her family, school and neighborhood. Talk about why caring and service are important.
- Share your own community service experiences. Tell your PAL why it feels good to help others.
- Look for ways to do community service with your PAL. Explore which activities are appropriate for your little PAL's age, and be careful about safety issues.
- Help your PAL draw pictures, write a story or keep a journal to reflect on community service experiences.

Encourage Responsibility

Many PALS activities involve lively animals and growing plants that require day-after-day attention. That's an important lesson in responsibility for little and big PALS. Here are some ways you can encourage your little PAL to behave responsibly.

- Remember that responsibility is learned, not “natural.” It is one of the important skills children need to develop for success.
- Take your own responsibilities seriously—especially your commitment to your little PAL.
- Give your PAL real responsibility, like caring for a plant. Make sure your PAL understands what needs to be done and how. You might want to create a reminder chart together.
- Praise and thank your PAL when he or she carries through with responsibilities.
- Do not always “come to the rescue” or “make everything OK” when your PAL makes a mistake. Children need to learn that their actions have consequences and that they are responsible for those consequences.
- If your PAL fails to carry through, be empathetic. Help your PAL think about what to do differently next time. Ask questions like, “How do you think you’re going to work that out?” Ask if your PAL would like to hear your ideas. Share stories about similar mistakes you have made and what you did to make up for irresponsible choices.
- Give the same responsibility again. This sends a powerful message that your PAL is smart enough to learn from his or her earlier mistake.

Respect Differences

To develop healthy self-esteem, children must learn how to interact fairly and productively with all people. Here's how you can help your little PAL learn these lessons.

- Recognize there are many biases in our society. If you do not counteract them, you support biases by being silent.

- Show your PAL that stereotypes are not true. Choose learning activities, storybooks and entertainment that contradict stereotypes. Focus on males and females in nontraditional roles, people of color in leadership positions, people with disabilities doing familiar activities and a variety of families and family activities.
- Remember, what you do is at least as important as what you say. Do not show bias in choosing friends and interacting with others. Do not repeat jokes or play music that reinforces stereotypes.
- Make it a firm rule that a person's appearance is never an acceptable reason for teasing or rejecting him or her. Immediately speak up if you hear or see your PAL behave in such a way.
- Respectfully listen to and try to answer children's questions about themselves and others. Don't ignore, change the subject or in any way make your PAL think he or she is bad for asking such a question.
- Talk positively about the physical characteristics and cultural heritage of your PAL and other children. Try to help children learn the difference between feelings of superiority and feelings of self-acceptance and pride in their own heritage.

Handle Emergencies

The best way to handle an emergency situation with your little PAL is to be prepared. Make sure you—

- know chapter procedures and school guidelines for handling emergencies;
- think ahead of time about safety problems that could occur and what you can do to prevent them and respond to emergencies if necessary;
- are familiar with basic first aid;
- always have a way to contact someone else to go for help;
- remove your little PAL from further danger as soon as it is safe to do so.

Learning Supports

Children need help “processing” what they learn through PALS activities. Here are some suggestions for helping little PALS reflect on and understand their PALS experiences.

Mission Statement

The Allentown FFA Chapter, New Jersey, makes sure all PALS activities focus on the mission they have set for their PALS program. It says, “The Allentown FFA Chapter teaches students personal growth, leadership, agriculture and development through Partners in Active Learning Support (PALS). FFA member Liz Lustgarten reports, “The importance of this mission statement is that it contains the acronym GLAD, which stands for Growth, Leadership, Agriculture, Development.”

People Grow, Too!

The Allentown FFA Chapter, New Jersey, taught little PALS about personal growth by planting marigold seeds with them. Big PALS showed the kids how to fill a cup with soil, put in seeds and cover them with soil, put a piece of plastic wrap over the cup and secure with a rubber band. After the little PALS planted their seed, they filled in a worksheet about the four things plants need to grow: soil, seeds, sunlight, water. While the little PALS planted seeds, big PALS explained that personal growth is a lot like plant growth. PALS gives elementary and high school students the things they need to grow.

PALS Logs

The Wapsie Valley FFA Chapter, Iowa, has little PALS keep a log. Drawing or writing a page in their log is part of each week’s PALS lesson. The big PALS take care of the logs between lessons. At the end of the year, the little PALS review their logs and keep them to remember the year and what they have learned.

PALS Workbook

The Allentown FFA Chapter, New Jersey, makes a PALS booklet for each little PAL. The workbook includes worksheets and coloring pages that go along with each PALS activity. Liz Lustgarten reports: “Each week, we added a couple of pages and gave the kids time to fill them out at the end of the activity. Once the PALS sessions were all over, the little PALS could take the books home. This allowed them to show parents everything that they learned. It also gave them a record of how to do everything, in case they wanted to do one of our activities at home.”

Confidence Coaching

Trying new things can be a scary for your little PAL. Your PAL doesn’t want to disappoint you or get frustrated by making mistakes. Being positive and patient goes a long way in encouraging your PAL to get the most from new learning opportunities. You can help by—

- talking with your little PAL about the purpose of the activity and why it is important;
- observing while your PAL practices a new skill;
- giving immediate, specific feedback;
- keeping comments to your PAL positive;
- giving your PAL information to keep trying until he or she can perform the task well;
- celebrating your PAL’s successful completion of each activity;
- sharing ideas for how your little PAL can use newly learned skills in other activities.

Problem Solving

When your little PAL looks to you for advice, it may be tempting to jump in and try to “fix” the problem. Your PAL will learn more by solving his or her own problems. You can help by—

- finding a quiet place without interruptions where you can speak seriously with your PAL;
- asking questions to uncover the real problem;
- listening without judging or interrupting your little PAL;
- resisting the temptation to attack and “fix” the problem;
- asking your little PAL for solutions, then asking follow-up questions to draw out other options;
- giving advice only when asked;
- supporting your little PAL’s final decision;
- remaining calm and keeping the conversation positive;
- seeking adult help if your little PAL tells you about serious situations that might involve abuse or other illegal activities.

Resources

Contact the organizations listed here for additional learning activities to complete with your little PAL.

National FFA Organization

6060 FFA Drive
P.O. Box 68960
Indianapolis, IN 46268-0999
(888) 332-2668 FAX (800) 366-6556
“PALS Kit”
“PALS Brochure”
“PALS: An Introduction” Video
“PALS Activities Handbook, Volume I”
“Farm Fun Compact Disc”
“Food For America Kit”

U.S. Department of Agriculture Agricultural Research Service

“Science 4 Kids”
www.ars.usda.gov/is/kids
“Whiz Kid Activity Packet”
www.ars.usda.gov/is/kids/teachers/WhizKidAct.htm

Agriculture in the Classroom

Room 3920-South
1400 Independence Ave.
Washington, DC 20250
www.reeusda.gov/serd/hep/agclass.htm

Farm Service Agency

“Agriculture for Kids”
www.fsa.usda.gov/edso/ca/agforkids.htm

Forest Service

The Smokey Bear-Woodsy Owl
Center of Excellence
402 S.E. 11th St.
Grand Rapids, MN 55744
“Woodsy Owl Activity Guide”
www.fs.fed.us/spf/woods
“Nature Watch”
www.fs.fed.us/outdoors/naturewatch/default.htm

National Agricultural Library

“Youth and Kids Pages in Agriculture”
www.nal.usda.gov/youthkids.html
“Projects and Experiments for Young Scientists”
www.nal.usda.gov/ttic/misc/juvag.htm

National Agricultural Statistics Service

Room 5805-South
1400 Independence Ave.
Washington, DC 20250
www.usda.gov/nass/nasskids/kidpg.htm

National Biological Control Institute

www.aphis.usda.gov/nbc/nbcistor.html

Natural Resources Conservation Service

“S.K. Worm”
www.nrcs.usda.gov/CCS/squirm/skworm.html
“Backyard Conservation”
www.nhq.nrcs.usda.gov/CCS/Backyard.html

Team Nutrition

3101 Park Center Dr., Room 1010
Alexandria, VA 22302
“The Kids Page”
151.121.3.25/teanut/Students/Kids/home.html

OTHER AGENCIES AND ORGANIZATIONS

Agricultural Network Information Center

“Plant Science for Kids”
www.unl.edu/agnicpls/pskids.html

America Reads Challenge

U.S. Department of Education
400 Maryland Ave.
Washington, DC 20202-0107
(800) 872-5327
www.ed.gov/inits/americanreads

Entomology Society of America

9301 Annapolis Rd.
Lanham, MD 20706-3115
esa@ensoc.org

Farm Safety for Children

101 S. Military
Box 244
Green Bay, WI 54303
“Safety First”
www.farmsafety.com/#safety

Resources

Farm Safety 4 Just Kids

P.O. Box 458
Earlham, IA 50072
(800) 423-5437
www.fs4jk.org/

4-H

“4-H Farm Animal Awareness Workbook”
lenoir.ces.state.nc.us/staff/jnix/pubs/an.workbook/games.html

imAGination Station™

Coalition for Agricultural Image Promotion
500 University Ave.
West Des Moines, IA 50266
www.ag.iastate.edu/centers/agaware/station1.html

Kids Food Cyber Club

www.kidsfood.org/kf_cyber.html

National Gardening Association

www.wowpages.com/nga/EDU/Home.html

National Museum of Natural History

“Insect Zoo Curriculum Module”
www.naturalpartners.org/InsectZoo/

Newton’s Apple (public television show)

“Teacher’s Guides”
www.askeric.org/Projects/Newton/

Reading Is Fundamental, Inc.

600 Maryland Ave., SW, Suite 600
Washington, DC 20024
(877) RIF-READ
“STAR (Science Technology and Reading)”
www.rif.org

Soil and Water Conservation Society

7515 N E Ankeny Rd.
Ankeny, IA 50021-9764
(800) 843-7645
“Ready, Set ... Get Wet!”
www.swcs.org

Lots of Links

Check out these web addresses for links to other youth-oriented agriculture sites and instructions for related craft activities.

www.usda.gov/news/usdakids/

discoveryschool.com/schrockguide/aged.html

family.go.com/Categories/Activities/Features/family_0401_01/dony/donyout_index/

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The PALS Activities Handbook, Volume I, is available for \$5 from the National FFA Organization (Item PALS AH).

Additional copies of this PALS Activities Handbook, Volume II, are also available for free (Item PALS AH2).

See page 82 for contact information.

