

The Art of Growing Things

Objective

Students will use seed packets to find information and solve math problems. Students will design their own seed packets. Students will research planting and growing fruits or vegetables and report their findings.

Background

The Pilgrims carried seeds from England to help them start their first crops in the Massachusetts colony. Later immigrants, arriving from distant lands, carried their precious seeds in their pockets and sewn into the linings of their clothes and suitcases.

There were no stores where early settlers could go to buy seed. Those who had not brought seeds with them or saved them from the last year's crop had to order them from England. This could be a huge expense for a struggling frontier family.

For frontier families, saving seed for the next year's crop was as important as getting the crop in. They became highly skilled at choosing the largest, best-looking seeds to use for the next planting season. Seeds were sometimes used for barter or as payment for services.

As the country became more settled, general stores opened and began selling seed in bulk. Seeds sold in bulk are stored in large containers, like wooden barrels or bins. The customer tells the clerk how much he or she needs, usually according to weight, and the clerk measures it out.

Some seed and feed stores still offer garden seeds and other grain crops to be purchased in bulk. These are usually seeds that grow well in the local climate and have proven to be popular with the public. Most garden seed is sold by the ounce, because most home gardens are small.

Farmers buy bulk seeds for field crops by the bushel. Sometimes they buy certified seed in 50-pound bags. In order to be certified, seeds must be approved by a certifying agency. Seeds are certified based on a certain set of standards designed to maintain a satisfactory level of genetic identity and purity.

Farmers may also save seeds from crops that produce particularly well. In that case, the farmer can hire someone to clean twigs and insect parts from the seeds, and then store the seed until it is time to replant. Stored seeds for crops must be dry and are often treated with chemicals to control fungus and keep insects from eating them. Big round metal bins with concrete floors and air blowers keep the seed grain safe and dry until the farmer is ready to plant the new crop.

The Shakers, a religious group in New York, started the first commercial seed nursery in the US. They placed their seeds in small paper packets called "papers." Most garden seeds today are still sold in packages very similar to those first papers.

Early seed packets were decorated with beautiful line drawings. Today,

Oklahoma Academic Standards

GRADE 3

Speaking and Listening: R.1,2,3;
W.1,2. Critical Reading and Writing: R.7. Vocabulary: R.1,3,5.
Research: R.1,2,3,4; W.1,2,3.
Multimodal Literacies: R.1,2;
W.1,2
Life Science: 1-1; 4-3,4
Economics: 2.1
Visual Art—Creating: 1,2.
Connecting: 4

GRADE 4

Speaking and Listening: R.1,2,3;
W.1,2. Critical Reading and Writing: R.7. Vocabulary: R.1,3,5.
Research: R.1,2,3; W.1,2,3.
Multimodal Literacies: R.1,2;
W.1,2
Life Science: 1-1
American History: 1.2D,4,5
Visual Art—Creating: 1,2.
Connecting: 4

GRADE 5

Speaking and Listening: R.1,2,3;
W.1,2. Vocabulary: R.1,3,5.
Research: R.1,2,3; W.1,2,3.
Multimodal Literacies: R.1,2;
W.1,2
Life Science: 1-1; 2-2
Visual Art—Creating: 1,2.
Connecting: 4

seed packets sold in stores are usually decorated with photographs of the plants the seeds will produce. Besides the common name and sometimes the scientific name of the plant, the seed packet will also include information about suggested planting depth, spacing between plants and other information about care and use. Most seed packets also include a map of the United States showing the different frost or growing zones.

Language Arts

1. Read and discuss background.
2. Hand out the Reading Page.
 - Students will read the passage in pairs and create a list of words from the passage that are unfamiliar to them.
 - Students will use online resources or classroom dictionaries to find definitions of the words on their lists.
3. Hand out the worksheet with questions about the Reading Page.
 - Students will answer the questions.
4. Provide a variety of seed packets for students to view and handle.
 - Students will list the kinds of information they find on the packets as you write their observations on the board.
 - Students will explain why each kind of information would be important to a gardener.
5. Each student will select a fruit or vegetable to research.
 - The student will use seed packets, seed catalogs, gardening books, encyclopedia and online resources to research the selected fruit or vegetable.
 - The student will write a time-lapse diary, relating the experiences of the fruit or vegetable during its lifespan.
 - The student will produce a written version for the teacher and give a dramatic reading to the class.
 - The oral presentation will be videotaped for analysis and critique.
6. Lead a discussion about the impact of packaging on consumer choices.
 - Bring in examples of two or three brands of the same product.
 - Students will choose one brand over another, based on packaging.
 - Students will explain their choices.
 - Students will answer the following questions: Do advertisers use certain colors and shapes more often than others? Why?
7. Provide an assortment of old magazines.
 - Students will view advertising for common brands of products and note changes in packaging between then and now.
 - Students will discuss possible reasons for changes in advertising.
8. Provide samples of old packaging for students to compare with new packaging.

Science

1. Students will research to find five garden vegetables that will tolerate cool weather and five vegetables that must have warm weather to grow.
2. Students will line the insides of glass jars with damp paper towels and proceed as follows.
 - Insert dry cucumber seeds between the towel and glass.
 - Place jars around the classroom in varying amounts of sunlight.
 - Record hypotheses regarding projected growth results.

Materials

assorted seed packets

seed catalogs

gardening books

scissors

crayons

glue

markers

packaging—two or three examples (brands) of same product

glass jars

cucumber seeds, sunflower seeds and assorted other

- Observe growth, measure, record and use data to develop line and bar graphs.
- Students will give oral reports on their activities, with a representative of each group reporting after each observation.
- Students will try the same experiment with sunflower seeds and then with a seed of their choice and compare results.
- Students will create data tables to show the results from each seed and compare and contrast their findings.

Social Studies

1. Students will find books in the library or search the internet to find information about the Shakers and other important inventions and contributions they have made.
2. Students will visit a local feed and seed store and ask the merchant to demonstrate the difference between buying in bulk and by the package.

Visual Art

1. Provide seed catalogs and gardening books for students to use as resources.
 - Each student will choose a plant and creates a seed packet design that would represent that plant.
 - Students research and write the general information that would appear on the back of the seed packet. (Useful downloadable resource:OSU Extension Fact Sheet “Oklahoma Garden Planning Guide” (<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1092/F-6004web.pdf>))
 - Once the preliminary designs have been created, students will transfer artwork and information to the seed packet pattern on the student worksheet. Colors and extra details may be added at this time.
 - Designs will be displayed on a bulletin board under the lesson’s title, “The Art of Growing Things.”

Extra Reading

- Barry, Frances, *Big Yellow Sunflower*, Candlewick, 2009.
- Carle, Eric, *The Tiny Seed*, Little Simon, 2009.
- Macken, JoAnn Early, *Flip, Float, Fly: Seeds on the Move*, Scholastic, 2008.
- Noyes, Deborah, and Bagram Ibatoulline, *Hana in the Time of Tulips*, Candlewick, 2005.
- Robbins, Ken, *Seeds*, Atheneum, 2005.

Vocabulary

certified seed—seeds approved by a certifying agency based on standards designed to maintain a satisfactory level of genetic identity and purity.

fungus—any of numerous plants lacking in chlorophyll, including yeasts, molds and mushrooms

genetic identity—all the characteristics of a particular breed that make it different from other breeds

growing zones—climatic division based on the length of the growing season in a given area

in bulk—method of buying and selling products that are not packaged

Shakers—a Christian group originating in England in 1747, which practices communal living

The Art of Growing Things

The Pilgrims carried seeds from England to help them start their first crops. Later immigrants from distant lands carried seeds in their pockets. Some sewed them into the linings of their clothes and suitcases. There were no stores where early settlers could go to buy seed. When they needed to buy seeds, they had to order them from England. This could be a huge expense for a struggling frontier family.

For these families, saving seed for the next year's crop was as important as harvesting the crop. They would choose the largest, best-looking seeds to use for the next planting season. Seeds were sometimes used for barter.

As our country became more settled, general stores opened and began selling seed in bulk. Seeds sold in bulk are stored in large containers, like wooden barrels or bins. The customer tells the clerk how many pounds or ounces he or she needs, and the clerk measures it out.

Some seed and feed stores still offer seeds for sale in bulk. Most garden seed is sold by the ounce, because most home gardens are small.

Farmers buy seeds in bulk, by the bushel. Sometimes they buy seeds in 50-pound bags. Thousands of pounds of seed are needed to plant a crop like Oklahoma's number one cash crop, hard red winter wheat.



Sometimes farmers save seeds from crops that produce well. In that case, the farmer can hire someone to clean twigs and insect parts from the seeds. Then the seed will be stored until it is time to replant. Stored seeds for crops must be dry. Sometimes they are treated with chemicals to control fungus and keep insects from eating them. Big round metal bins with concrete floors and air blowers keep the seed grain safe and dry until the farmer is ready to plant.

The Shakers, a religious group in New York, started the first commercial seed nursery in the US. They placed their seeds in small paper packets called "papers." Most garden seeds today are still sold in packages very similar to those first papers.

Early seed packets were decorated with beautiful line drawings. Today, seed packets sold in stores are usually decorated with photographs of the plants the seeds will produce. The seed packet will include information about suggested planting depth, spacing between plants and other information about care and use. Most seed packets also include a map of the US showing the different frost or growing zones.

Name _____

The Art of Growing Things

1. Why did early settlers and later immigrants carry seeds with them when they came to the New World?
2. After our country was more settled, farmers could buy their seed from the _____
3. Garden seeds are sold by the _____. Seeds for crops are sold by the _____ or the _____.
4. How is buying in bulk different from buying in packages?
5. What is the name of the religious group that first started selling seeds in packages? _____
6. What information is usually included on a seed packet?

What do you think?

Why would it be better to buy in bulk?

Why would it be better to buy in packages?

Name _____

The Art of Growing Things (answers)

1. Why did early settlers and later immigrants carry seeds with them when they came to the New World?

There were no stores to buy seeds, and ordering them from England was expensive.

2. After our country was more settled, farmers could buy their seed from the general stores.

3. Garden seeds are sold by the ounce. Seeds for crops are sold by the pound or the bushel.

4. How is buying in bulk different from buying in packages?

When you buy in bulk, you tell the clerk how much you want, and he or she measures it out. When you buy in packages, you buy the amount that is already in the package.

5. What is the name of the religious group that first started selling seeds in packages? Shakers

6. What information is usually included on a seed packet?

Suggested planting depth, spacing between plants and other information about care and use. Most seed packets also include a map of the US showing the different frost or growing zones.

What do you think?

Why would it be better to buy in bulk?

Possible answers— You only get as much as you need, so there is less waste. Sometimes buying in bulk is cheaper because you don't have to pay for packaging and advertising.

Why would it be better to buy in packages?

Packages have the information to tell you how to plant. Packages have pictures of the plant, so you know what you are getting and can remember what kind of seeds they are.

