



Growing the Future by Teaching Children in the Gardens

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Granny's Great Amaryllis Race Preschool

Lesson Summary

When to use this lesson

Use this lesson in January as an indoor activity.

Objective

Students understand needs and growth cycle of an amaryllis bulb and demonstrate observational and reasoning skills as growth occurs and information is collected.

Standards

S1CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.

S1CS5. Students will communicate scientific ideas and activities clearly.

- a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.
- b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.
- c. Use simple pictographs and bar graphs to communicate data.

S1L1. Students will investigate the characteristics and basic needs of plants and animals.

- a. Identify the basic needs of a plant.
 - 1. Air
 - 2. Water
 - 3. Light
 - 4. Nutrients
- b. Identify the parts of a plant— root, stem, leaf, and flower.

Materials

Amaryllis kit materials

- One planted amaryllis bulb
- One sample amaryllis bulb
- One cut open onion, optional
- Handled basket to hold the planted pot
- Frisbee to place under basket to collect water
- Laminated poster board to graph data
- One chart for the class to collect data (teacher instructions on back)
- A ruler
- A plant stake
- Cut out the shape of a horse's ear and the shape of a star, optional
- Flyer to send home with each student
- A sticker for each student announcing the kickoff of the race

Additional classroom/lesson materials

- Ruler or other non-standard measurement tool
- Yarn to tie stem to handle of basket, if needed

Estimated Duration

30 minutes to set up the activity and daily or weekly follow up for 6-8 weeks.

Coordinator Preparation

- Supplies are pre-assembled and ready for coordinators to collect the week before the amaryllis race starts.
- The bulbs and soil should be stored inside your house and not the garage or even in your car overnight. This keeps the warming cycle going to encourage plant growth.

Activity

- Show the bulb and explain what it is. *This is a bulb. A bulb is not a seed. It is a special kind of plant part. If I hold it upside down, does it look like a light bulb? Their shapes look the same. My bulb grows a plant that makes a flower called an amaryllis.*
- Show the inside of the bulb (or an onion) and describe the parts that help the bulb grow.
 - ✓ *It has a skin on the outside for a bit of protection.*
 - ✓ *It has roots at the bottom to take in water.*
 - ✓ *It has a plant inside waiting to start growing.*
 - ✓ *It has layers of food to feed the new plant.*
- What will the bulb need to grow a plant?
 - ✓ *Air – Is there air in the classroom?*
 - ✓ *Water – Is there water in the classroom? Your teacher will help you decide when and how much to water your bulb.*
 - ✓ *Sunlight when the plant grows – Where is the best spot? When the plant grows, it will need light to keep growing. Before the plant grows, though, the plant should be in a warm spot. If the space by the window is too cold, try a spot away from the window until the plant starts to grow.*
- Show the potted bulb. *This is the amaryllis bulb that will grow in your classroom. Having this bulb in your classroom means that you are part of a race. It's a race to see which classroom grows the tallest plant and the longest leaf and which has the first open flower.*

Take a look at your bulb every day to observe how the bulb and plant change each day. Your teacher will help you write or make a picture about how the bulb grows.

- Ask students if they know what a prediction is. *A prediction is a guess about what you think will happen. Let's make some predictions about how the amaryllis bulb will grow. Before the flower grows, a stem and leaves will grow.*
- Take a hand vote of predictions about which will grow first, the stem or a leaf. Have students close their eyes so each makes his or her own prediction. *When you make a prediction, it is your guess. It doesn't matter what anyone else guesses.*
- Show a ruler. *Our next prediction is about how tall you think the plant will be when it has a flower. Do you think the plant height will be shorter than the ruler, the same height as the ruler, or taller than the ruler?*
- Take a hand vote for each option. Again, have the students close their eyes to make the prediction.
- Tell students that we are having a contest for the most amazing amaryllis name. *A man gave this kind of plant a scientific name – Hippeastrum (hip-e-as'trum). In another language, this name means horse star. The scientist thought he saw the shape of a horse's ear and the shape of a star when the plant was growing.*
- Show the shapes of the horse's ear and the star. If you do not have cut out shapes, draw a picture on the board. If you brought shapes, leave them with the class.
- *Your job is to come up with one name for your plant. Your teacher will help you think of ideas to name your plant.*
- Place the plant stake in the pot and water in the bulb for the class.
- **If your bulb is not pre-planted, here's how to plant your bulb.** Your pot should be 2/3 pre-filled. Place the bulb on the top of the soil and use the soil from the bag to fill in around the bulb. Leave the top 1/3 of the bulb exposed. Press soil firmly into place without compacting the soil. Using lukewarm water, water the bulb well on the day it is planted. Use more soil if soil settles after watering, and leave any remaining soil for the teacher.

Extensions and Discussion Questions

- Have students share their observations in a group setting. After the plant has started to grow, ask for predictions about how tall the plants will be the next day. Will it grow the same amount? You should notice that once the stem (the part with the closed bud at the end) begins to grow, growth occurs rapidly.
- Ask students to draw their observations.
- Count the open blooms. Count the flower parts in the middle of a bloom. Does each bloom have the same number of flower parts?
- Count the leaves as they emerge.
- Compare the number of blooms to the number of leaves.

- Compare the height of the stem to the length of the longest leaf. Are they growing the same amount? When the stem is growing, the bulb will put most of its energy into the production of the flower.
- How do the leaves and stem grow in relation to each other? The leaves do not grow from the stem. The stem does not grow in the middle of the leaves. The stem should be growing on one side of (next to) the leaves. Is this the same or different from what they know about plants?
- If a student observes that the plant is bending toward the window, ask why. The plant is reaching for the light. Test this by turning the plant to see if the stem will again reach for the light and straighten in the process. (This is called **phototropism**. Tropism is movement of a plant toward or away from an environmental stimulus like light, water, gravity. Photo means light in scientific terminology when it is combined with another term.)
- When the flower dies, is the plant dead? No, the flower is temporary to attract pollinators. When all blooms have wilted, energy will go into creating a seedpod if the flower was pollinated. If the flower was not pollinated, the stem can be cut off, and the energy will be directed into growing leaves.
- You can pollinate a bloom by using a cotton swab to collect pollen from the stamen of one bloom and rubbing the pollen on the pistil of a different bloom. The pistil is the white center flower part. The pistil should look open with three lobes.

Teacher Notes (found on the back of the growth chart)

Using Supplies

Using the growth chart

- The new plant will grow from the top of the neck, so measure the height of the stem (including the bud or flower) and the length of the longest leaf with the ruler touching the top of the neck.
- The height of the bulb neck should *not* be included in measurements.
- Measure to the nearest ½ inch.
- Watch for emails about reporting information. We'll award certificates for the best name, the longest leaf, the tallest plant, and the first open bloom.
- Record information on the chart to use for graphing on the poster board or to incorporate the information in other classroom discussions and activities listed in the "extensions" section.

Using the poster

- Please only use dry erase markers on the poster, since we reuse the posters.
- When hung in the hallway, the poster shows other classes how your amaryllis is growing.
- You may decide to track the growth of both the longest leaf length and flower stem height on the same graph using two colors and a key, or you may decide to track only the height of the stem.
- You decide which is best for your class, a line graph, a bar graph, or a picture of the plant.

Plant Care

Caring for your plant

- Keep your bulb in a warm location until the plant starts to grow. Sometimes window ledges are too cold to stimulate growth. If the pot feels cold, move the plant away from the window until the plant is growing. Then move it to a sunny location.
- Your coordinator watered your bulb well on the day it was planted. After the initial watering, water when the top inch of soil is dry to the touch. Do not overwater. The bulb is healthy if it feels firm to the touch.
- Using lukewarm water will help initial growth.
- Tie the stem loosely to the plant stake if needed.

When your plant has finished blooming

- When your plant has finished blooming, please contact us and someone will pick up your plant, poster, Frisbee, and basket.
- ***Please do not cut back the leaves.***

Potential problems

- Long spindly flower stems from too little light
- Short flower stems from too much light
- Turn your plant if it starts to lean toward the light. This is called **phototropism**. Tropism is movement of a plant toward or away from an environmental stimulus like light, water, gravity. Photo means light in scientific terminology when it is combined with another term.

If You Want to Know More about Amaryllis Plants

- In 1829, Elizabeth Wirt, an American, wrote a floral dictionary and gave the flower name Amaryllis the meaning "splendid beauty".
- In 1837, Reverend William Herbert separated flowers that were called amaryllis according to their growing traits and appearance. He named a new genus Hippeastrum for a group with traits similar to each other, but different from true Amaryllis. Hippeastrum comes from the Greek *hippos* for horse or *hippeus* for rider and *astron* for star. Translated Hippeastrum means *horseman's star*. Although no one is certain how the name was selected, some compare the look of the closed bud to the shape of a horse's ear and the blossoms to stars.
- Amaryllis bulbs planted outside need a warm climate to survive and are generally hardy in the United States in zones 8-11. In those zones, they are planted in late summer/early fall and bloom in May/June. Our hardiness zone is 6, so the bulb will not survive winter outdoors.
- Amaryllis bulbs produce flowers in a variety of colors like red, pink, white, yellow, salmon, orange, and a mixture of those colors.
- All parts of the amaryllis plant are toxic if eaten.
- Amaryllis bulbs can produce new plants called bulblets from the mother bulb. Bulblets can be removed and planted to start a new amaryllis plant. If an amaryllis bulb has two flower stems, it is a sign that there are actually two bulbs that eventually will separate.

Sources

- Hippeastrum x hybridum. Electronic Data Information Service of the University of Florida IFAS Extension. <http://edis.ifas.ufl.edu/FP255>, 12-07-08.
- Amaryllis. Pacific Bulb Society. <http://www.pacificbulbsociety.org/pbswiki/index.php/HomePage>, 01-22-09
- Ockenga, Starr. "Excerpt from the Book Amaryllis", GardenGuides.Com, <http://www.gardenguides.com/books/amaryllisexc.asp>



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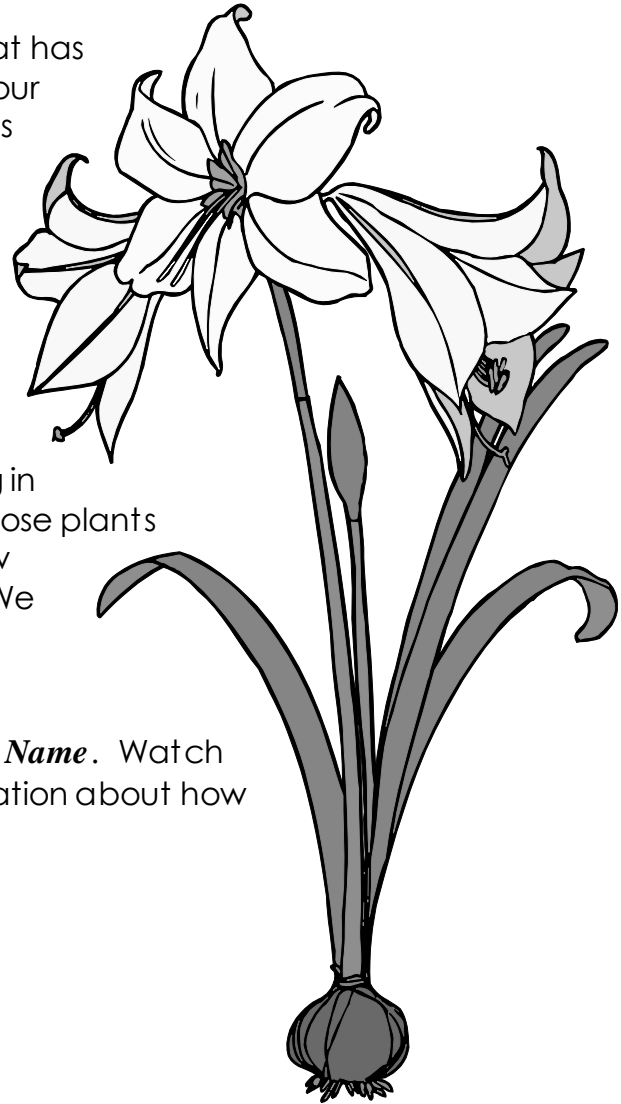
Today we kicked off Granny's Great Amaryllis Race. Granny's Great Amaryllis Race brings beautiful blooms to the classroom in January and February.

We learned that an amaryllis is a flowering bulb that has special parts to grow a plant. We discussed what our bulb will need to grow, and made some predictions about how it will grow.

We'll compete with other classes in categories like the most amazing name, the longest leaf, the tallest plant, and the first open bloom.

Look for local businesses that are also participating in the race and encourage your child to compare those plants to the plant in the classroom. Ask your student how their bulb is growing over the next several weeks. We expect the plants to bloom in 6 to 8 weeks.

Soon we'll be selecting ***The Most Amazing Amaryllis Name***. Watch for a newsletter from the school district with information about how you can vote.





Our Amaryllis

Our Predictions

What will grow first?

How tall will the stem and flower grow?

The stem _____ Less than 12 in. _____ Equal to 12 in. _____ More than 12 in. _____

The leaves _____

Our Data

Date	Height of stem (include bud/flower)	Length of longest leaf	How many leaves?	First open bloom	How many blooms?