



## Lesson: Life Cycle of the Sunflower

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### OVERVIEW

The life cycle of a sunflower provides the context for the second half of *The Golden Queen*. Understanding the context of a musical work is an essential feature of the FACETS Model. The Life Science concepts are embedded in the song lyrics.

Students are introduced to plant cycles in elementary school; key concepts are revisited and developed through subsequent grades levels. Middle school students can draw on their prior knowledge to interpret the song lyrics through the lens of science.

### LEARNING GOAL

Students will connect the unfolding story told in the lyrics and melody of *The Golden Queen* to prior knowledge and concepts about the life cycle of plants when they organize the song lyrics alongside a diagram of a sunflower plant cycle.

Students will demonstrate their understanding of the song's poetic language/ lyrics through the lens of what they know about the life cycle of a plant when they organize and write the song lyrics on a diagram of the life cycle of a plant.

### RESOURCES & MATERIALS

- Song lyrics from the score, [as a handout](#), or visual display
- Student copies of the "[Life Cycle of the Sunflower](#)" reading
- Student copies of the "[Connecting Song Lyrics & the Sunflower Life Cycle](#)" graphic organizer

### PROCESS

1. Read about and view a diagram of the sunflower's life cycle. Recall the scientific names for various parts of the cycle.
2. Read the lyrics of *The Golden Queen* out loud. Help students notice that the second section of the poem speaks to the sunflower's life cycle. Isolate one phrase or word from the poem and connect it to the life cycle. For example, "a lone sunflower drops a healthy seed" aligns with seeds being sown.
3. Explain the activity to students. Working in partners they will:
  - Briefly review the events in the plant life cycle

- Review the poetry/lyrics of in the second part of *The Golden Queen*
  - Look closely at the illustration. Match the events of the plant life cycle with the specific song lyrics printed under the cycle, then write the quoted lyrics into the appropriate places on the illustration.
4. After completing the assignment, ask each pair to meet with another pair of students to compare work and provide feedback. Based on this conversation, they can edit their responses if they wish to do so.
  5. As an optional approach, assign the project as homework for individuals and provide a short work time in class to compare notes and edit the work.

### EXTENSIONS

- Collaborate with your school's science teachers to help you make the science connections.
- There are several photographic essays on YouTube about the life cycle of the sunflower. Ask students to search and preview some of the presentations and report on the one they assess as the best example to share with others. A great time-lapse video can be found at <https://www.youtube.com/watch?v=zst08tm9s6M>. Might be fun to run this video on a large screen as the choir sings *The Golden Queen*.

### ASSESSMENT

The students' written completed work is an informal assessment about understanding and interpreting the text. It provides some evidence about student comprehension of the song's subject and what is being expressed.

## LIFE CYCLE OF THE SUNFLOWER

Sunflowers, or helianthus, grow quickly. They are annuals which means they germinate, flower, and die in just one growing season. They can grow in almost any fertile soil that is warm, moist and well drained. Sunflowers comes in many varieties, sizes, colors, and heights.

The five stages of the life cycle (the illustration on the left) are **seed**, **sprout**, **seedling**, young adult and adult. During these five stages the sunflower is transformed from a tiny seed to a huge flowering plant.

1. A seed is planted under a quarter to half inch of warm, moist soil. The seed's hard coat slowly softens in the soil.

**Germination** takes five to twelve days.

2. A **taproot** pushes downward and the first leaves of the sprout break through the surface of the soil.
3. The taproot anchors the plant as it grows into a seedling. As the taproot continues to push downward, it can burrow as far as six feet into the **soil**. Other roots grow out from the base of the stem into the top layers of soil.
4. As it grows to young adulthood, the plant puts out a single smooth, hollow **stem** with large arrow shaped leaves growing from the top. After 30 days, a single flower bud emerges and the stem strengthens to support its weight. Three weeks later, the tiny bud has grown into a flat, green disk. Yellow florets begin to appear eventually becoming a flower blossom.
5. When the blossom finishes blooming, the central core of the disc florets swell and develop into seeds, ripening over the course of about 30 days. As seeds ripen, the rest of the plant begins to wane as leave yellow and fall. All the energy is now focused on the seed head. Once ripe, each seed dries. It might be harvested by humans, fall to the ground, or be plucked away and eaten by a hungry bird or small rodent. The sunflower stops growing when the seeds ripen and drop, but the plant does not die until temperatures drop below 28 degree Fahrenheit overnight.



*Dutch painter, Vincent Van Gogh, was famous for his Sunflower paintings. The second series, begun in 1888, included this painting of 15 sunflowers. In 1988, Van Gogh's painting Still Life, Vase with Fifteen Sunflowers, sold in an auction for a record \$39,921,750.*



### INTERESTING FACTS

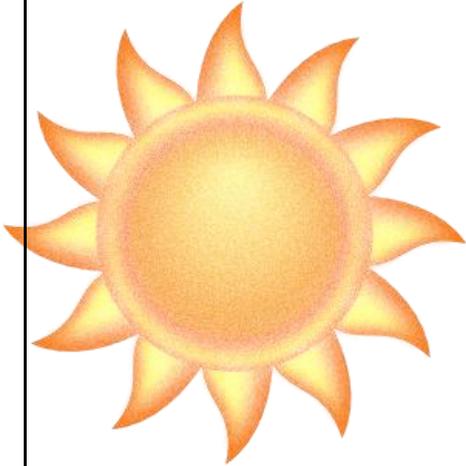
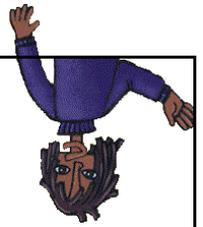
- Kansas is the sunflower state. Sunflowers are also the national flower of Ukraine.
- A sunflower stem can grow up to 18 feet tall. The Guinness World Record is 27 feet tall.
- The sunflower is a native to North America. American Indians used parts of the plant for food, oil, bread flour, and medicine.
- The head of the sunflower is made of tiny flowers called florets. The florets in the middle look like the center of a normal flower. The florets on the outside look like yellow flower petals.
- Only young sunflowers follow the sun (a phenomenon known as heliotropism).
- One sunflower can have up to 2,000 seeds.



## THE TEXT OF THE GOLDEN QUEEN

Written by Madison Hokstad & Stella Peterson

Adapted by René Clausen



The golden queen strides across the sky,  
Gathering the people's eager eyes,  
They stare in awe, they stare with love,  
Until the light is diminished up above.  
Their golden manes glint their last,  
As the shadow of night is cast.  
But the sun is revived, it glows again,  
It shines its light across the glen.

A lone sunflower drops a healthy seed,  
Trusting fate will be a supportive lead.  
It plants itself in the warm, soil, asleep yet awake,  
Preparing itself for the great path it will take.  
A green sprout shoots out of the ground,  
Growing and growing, safe and sound.

Beautiful petals begin to appear,  
And the plant knew adulthood was near.  
The plant watched the Golden Majesty,  
Seeking guidance away from the growing catastrophe.  
She fears death is close,  
So she bears a seed to live,  
And lives.

