Unit 3Title: Why Leaves Turn Color in the Fall

Suggested Time: 3 days (40 minutes per day)

Common Core ELA Standards: RI.8.1, RI.8.2, RI.8.3, RI.8.4; W.8.2, W.8.4, W.8.9; SL.8.1; L.8.1, L.8.2, L.8.4, L.7.5

Teacher Instructions

**Preparing for Teaching**

1. Read the Big Ideas and Key Understandings and the Synopsis. Please do **not** read this to the students. This is a description for teachers about the big ideas and key understanding that students should take away **after** completing this task.

Big Ideas and Key Understandings

Phenomena in nature occur in a cycle that is characteristic of the life cycle of human beings.

Synopsis

Diane Ackerman describes fall foliage and explains the natural processes that cause the leaves of deciduous trees to turn each year. Along with her observations, she also muses on the significance of the changing of seasons and on life and death.

1. Read the entire selection, keeping in mind the Big Ideas and Key Understandings.
2. Re-read the text while noting the stopping points for the Text Dependent Questions and teaching Tier II/academic vocabulary.

**During Teaching**

1. Students read the entire selection independently.
2. Teacher reads the text aloud while students follow along, reading in their head. Depending on the text length and student need, the teacher may choose to read the full text or a passage aloud. For a particularly complex text, the teacher may choose to reverse the order of steps 1 and 2.
3. Students and teacher re-read the text while stopping to respond to and discuss the questions, continually returning to the text. Use think-pair-share to discuss and develop the meanings of “Words that require more time to learn.”

Text Dependent Questions

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| **Text-dependent Questions** | **Evidence-based Answers** |
| What does the author mean by, “The stealth of autumn catches one unaware”? What figurative language is used in this message? | The author means that when the season changes to autumn it does so, slowly, so that most people don’t even realize it is happening. For example, the simile “keen-eyed as leopards we stand still and squint hard, looking for signs of movement,” suggests that when we look at the woods on a fall day, sometimes the leaves’ colors change subtly, without us knowing and we have to look hard to see if they are actually living.  |
| Identify one example of imagery in paragraph one. How does this imagery add to the meaning of the essay?  | One example of imagery the author uses is, “Early-morning frost sits heavily on the grass and turns barbed wire into a string of stars,” which means that frost sparkles brightly on wire in the woods. This image adds meaning to the essay because it allows the reader to experience the changing of leaves in the fall, which the author describes so vividly, through the visual senses.  |
| The author describes a phenomenon that “people will travel up and down the East Coast just to stare at it.” To what is the author referring? Describe this phenomenon.  | The author is referring to changing of leaves in the fall and describes it as a “gushing of color so bright, so pastel, so confetti like.”  |
| The author begins with the question “Where do colors come from?” Summarize the scientific process leaves go through in order to change colors that the author details. | After the summer solstice, days shorten and leaves no longer get an abundance of sun. The trees begin pulling nutrients back into the trunk and roots and begin to choke off the leaves. A layer of cells forms and then scars over. The leaves stop producing chlorophyll and photosynthesis stops. The tree survives by dropping most of its leaves. The remaining leaves are held to the tree by xylem. As the chlorophyll in the leaves break down, they begin to reveal splotches of yellow and red. No new pigment is produced in fall, so the colors are no longer hidden by the green that was produced by the chlorophyll in summer.  |
| What is meant by the simile “hidden like a vivid secret beneath the hot glowing greens of summer”?  | It means that the colors of fall leaves are actually there, but are hidden in summer because chlorophyll produces the pigment green, so the leaves are “camouflaged” until the pigment is no longer produced and the true colors of the leaves show through.  |
| What is the author alluding to when she mentions “a state of grace"? Describe the scientific process that contributes to this state of grace. | The author is alluding to the “the spectacular range of fall foliage,” for example, “leaves that are robustly colored,” and the “flaming reds” which are produced in nature by the fall leaves in certain years when the fall sunlight is strongest and the nights are cool and dry. The scientific process occurs when the levels of anthocyanin vary and change the pigment of the foliage which is produced by the sugars that remain in the leaves. The level of pigmentation varies depending on the amount of temperature and sunlight.  |
| What is the “odd feature of the colors”? Explain how the leaves’ colors differ from animals’ and flowers’ coloring. | The changing colors of leaves don’t have a special purpose like animals and flowers. This differs because animals change colors to adapt to their environment, and plants do not. |
| What does the author mean by “in a sense they dupe us”? | The author means that the colors in the leaves trick us by appearing to be life like by “sizzling” and “thrilling”, but they actually are preparing to die (“they signal death and disintegration”).  |
| To what does the author compare the leaves? Explain the similarities.  | The author compares colored leaves to living things by saying “in time, they will become fragile, and like the body, return to dust,” and goes on to say they are as we hope to be when we die, “Not to vanish, just to sublime from one beautiful state into another.” |
| There are many literary devices to describe the fall season. Identify the literary devices used, give the example, and explain the meaning.  | Simile - Fall is the time when leaves fall from the trees, just as spring is when flowers spring up,” which compares leaves falling to flowers growing in spring.Alliteration - summer is when we simmer, and winter is when we whine from the cold.” This compares what people do in summer to what we do in winter.Allusion - Eden, “that other Fall,” Adam and Eve, “leaves have always hidden our awkward secrets”. This compares fall to a scene in the Bible when Adam and Eve eat the forbidden fruit and “fall” from grace.Personification - Fall is staggering in, right on schedule, with its bag­gage of chilly nights, macabre holidays, and spectacular, heart-stop­pingly beautiful leaves. |
| Why do leaves fall?  | As a leaf ages, the growth hormone, auxin, fades, and the cells at the base of the petiole divide. The rows of small cells react with water and then come apart, leaving the petiole hanging on by a few threads of xylem. As the wind blows, the leaves detach and become airborne.  |
| Why do we “love to see things rise up and fly”?  | We like to see things rise up and fly because they remind us of the process of aging and death. According to the selection, the end of a season or life is “capricious,” it tends to change abruptly, without an apparent reason. |
| What can “remind us how detailed, vibrant, and alive are things of this earth that perish”? Why does the author mention this and what is its significance? | An imprint of a leaf in a fossil stone reminds us of how things on this earth were once alive. The fossil stone is meant to draw our attention again to the life cycle. That life and the life cycle persist, even though plants, animals, and people “perish.”  |

Tier II/Academic Vocabulary

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|  | **These words require less time to learn**(They are concrete or describe an object/event/process/characteristic that is familiar to students) | **These words require more time to learn**(They are abstract, have multiple meanings, are a part of a word family, or are likely to appear again in future texts) |
| **Meaning can be learned from context** | squint barbedbaggagespectacularclencheddawnsdissolvescamouflagemarvelrobustlyceasesfragiledizzyingly shudderingsublimesignaltetheredcareenheaped vibrantsemi-decayedmortartunneling | staggeringcringingmacabreprocessvividthrivedwindle |
| **Meaning needs to be provided** | stealth edictsparescorkyundernourishedpigmentmigratehibernatesplotchfoliageflamingmarqueescarletbalesbestowsdupemummifiedcarnal overhungaltitudeshrewimprintperish | perchingkeen-eyedreconsidersgraduallyproducingfiercestvexingradiantsymphonicpredisposedadaptation (adaptive)haphazarddisintegrationwitheredsimmeredunrulyfigmentssheercapricious |

Culminating Writing Task

* Prompt

*An important theme in “Why Leaves Turn Colors in the Fall” is that the changing seasons in nature are similar to the life cycle of human beings. The author discusses falling leaves and claims “they remind us of the end of a season is capricious as is the end of life.” Analyze the author’s claim by tracing the evidence that is referenced throughout the essay. Compose an analysis that is one page or more in length. Support your analysis with valid reasoning and relevant and sufficient evidence from the text, including direct quotes and page numbers.*

* Teacher Instructions
1. Students identify their writing task from the prompt provided.
2. Students complete an evidence chart as a pre-writing activity. Teachers should remind students to use any relevant notes they compiled while reading and answering the text-dependent questions.

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| ***Evidence******Quote or paraphrase*** | ***Elaboration / explanation of how this evidence supports ideas or argument*** |
| “We find the sizzling colors thrilling, and in a sense they dupe us. Colored like living things, they signal death and disintegration. In time, they will become fragile and, like the body, return to dust.” | The way that leaves change colors and fall off of trees in autumn is similar to the body changes that occur with death; one day they are colorful and vibrant, and the next day they wither and die. |
| “They are as we hope our own fate will be when we die: Not to vanish, just to sublime from one beautiful state into another.” | Leaves become more beautiful as the seasons change, from green to vibrant colors, until they subtly blow away and disintegrate. Human beings also slowly age from birth to childhood, to adulthood to old age, until they gradually approach death. |
| “Fall is the time when leaves fall from the trees, just as spring is when flowers spring up, summer is when we simmer, and winter is when we whine from the cold.” | Humans react to changes in nature and are in sync physically with the changing seasons. |
| “As a leaf ages, the growth hormone, auxin, fades, and cells at the base of the petiole divide. Two or three rows of small cells, lying at right angles to the axis of the petiole, react with water, then come apart, leaving the petioles hanging on by only a few threads of xylem. A light breeze, and the leaves are airborne. They glide and swoop, rocking in invisible cradles. They are all wing and may flutter from yard to yard on small whirlwinds or updrafts, swiveling as they go. Firmly tethered to earth, we love to see things rise and fly – soap bubbles, balloons, birds, fall leaves. They remind us that the end of a season is capricious, as is the end of life.” | The life cycle by which leaves grow and mature is similar to the hormonal and physical changes that human beings cycle through; the changes appear gradually and are marvels of nature. The end of the autumn season, which is visible in the capricious changing of the leaves, is similar to the capricious physical changes that occur with the human body. They both seem to appear suddenly, and catch us unaware. |
| “Sometimes one finds in fossil stones the imprint of a leaf, long since disintegrated, whose outlines remind us how detailed, vibrant and alive are the things of this earth that perish.” | Fossils in rocks are reminiscent of leaves that have died and remind us of the leaves in their prime. This is similar to the memories that can be evoked when human beings die and are remembered long after they perish. |

1. Once students have completed the evidence chart, they should look back at the writing prompt in order to remind themselves what kind of response they are writing (i.e. expository, analytical, argumentative) and think about the evidence they found. (Depending on the grade level, teachers may want to review students’ evidence charts in some way to ensure accuracy.) From here, students should develop a specific thesis statement. This could be done independently, with a partner, small group, or the entire class. Consider directing students to the following sites to learn more about thesis statements: http://owl.english.purdue.edu/owl/resource/545/01/ OR http://www.indiana.edu/~wts/pamphlets/ thesis\_statement.shtml.
2. Students compose a rough draft. With regard to grade level and student ability, teachers should decide how much scaffolding they will provide during this process (i.e. modeling, showing example pieces, sharing work as students go).
3. Students complete final draft.

Sample Response:

In the beginning of the essay, the author describes the process of leaves changing colors and form as the season changes from summer to autumn. She claims, “We find the sizzling colors thrilling, and in a sense they dupe us. Colored like living things, they signal death and disintegration. In time, they will become fragile and, like the body, return to dust” . The way that leaves change colors and fall off of trees in autumn is similar to the body changes that occur with death; one day they are colorful and vibrant, and the next day they wither and die.

The author goes on to explain what happens in death and how that compares to what happens to leaves. She states, “They are as we hope our own fate will be when we die: Not to vanish, just to sublime from one beautiful state into another”. Leaves become more beautiful as the seasons change, from green to vibrant colors, until they subtly blow away and disintegrate. Human beings also slowly age from birth to childhood, to adulthood to old age, until they gradually approach death.

Next, the author gives details about how humans react to the changing seasons and compares the ways humans react to how nature reacts to the changing seasons. She claims that nature reacts by saying “fall is the time when leaves fall from the trees, just as spring is when flowers spring up”. The author describes the way humans react by saying, “summer is when we simmer, and winter is when we whine from the cold”. Humans react to changes in nature and are in sync physically with the changing seasons, similarly to the way nature reacts and is in sync with the changing seasons.

The author goes on to explain the scientific process behind the changes in leaves and how this compares to the life cycle of humans. “As a leaf ages, the growth hormone, auxin, fades, and cells at the base of the petiole divide”. The life cycle by which leaves grow and mature is similar to the hormonal and physical changes that human beings cycle through as they age; the changes appear gradually and are marvels of nature. The end of the autumn season, which is visible in the capricious changing of the leaves, is similar to the capricious physical changes that occur with the human body. They both seem to appear suddenly, and catch us unaware.

Finally, the author describes the death phase by explaining the remains of leaves and how fossils that remain are mementoes left behind. She claims, “Sometimes one finds in fossil stones the imprint of a leaf, long since disintegrated, whose outlines remind us how detailed, vibrant and alive are the things of this earth that perish”. Fossils in rocks are reminiscent of leaves that have died and remind us of the leaves in their prime. This is similar to the memories that can be evoked when human beings die and are remembered long after they perish.

Additional Tasks

* Research another phenomenon in nature. Using a structure similar to Ackerman’s, compose an essay that explains the scientific process behind the phenomenon and includes comparisons to the life cycle (for example, comparing the water cycle to the life cycle of the butterfly).
* Take a nature walk, noting the sensory imagery that is present. Write a descriptive essay that details the sights, smells, and sounds that are present. Use figurative language to create vivid images for your readers.

Notes to Teacher

* During the second read, teach vocabulary “Words that require less time to learn” and those that fall under “Meaning needs to be provided.”
* Please notice that this text is filled with figurative language and other literary devices. In order to understand the big idea, students should read the text several times using the scaffolds of vocabulary instruction and text-dependent questions.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_

**“Why Leaves Turn Color in the Fall”**

1. What does the author mean by, “The stealth of autumn catches one unaware”? What figurative language is used in this message?
2. Identify one example of imagery in paragraph one. How does this imagery add to the meaning of the essay?
3. The author describes a phenomenon that “people will travel up and down the East Coast just to stare at it.” To what is the author referring? Describe this phenomenon.
4. The author begins with the question “Where do colors come from?” Summarize the scientific process leaves go through in order to change colors that the author details.
5. What is meant by the simile “hidden like a vivid secret beneath the hot glowing greens of summer”?
6. What is the author alluding to when she mentions “a state of grace"? Describe the scientific process that contributes to this state of grace.
7. What is the “odd feature of the colors”. Explain how the leaves’ colors differ from animals’ and flowers’ coloring.
8. What does the author mean by “in a sense they dupe us”?
9. To what does the author compare the leaves? Explain the similarities.
10. There are many literary devices to describe the fall season. Identify the literary devices used, give the example, and explain the meaning.
11. Why do leaves fall?
12. Why do we “love to see things rise up and fly”?

What can “remind us how detailed, vibrant, and alive are things of this earth that perish”? Why does the author mention this and what is its significance?