

## Indoor Flowering Plants

### CTE TN State Standards for Literacy in Science and Technology Aligned Lesson

This resource is best for:

<b>Teachers of:</b>	Landscaping and Turf Science	<b>Career Cluster:</b>	Agriculture, Food and Natural Resources
<b>Addressing Standard(s):</b>	Standard 10	<b>Grade-Band:</b>	11-12
<b>In alignment with CTSO:</b>	FFA <a href="http://www.tnffa.org">www.tnffa.org</a>	<b>CTSO Event: (if applicable)</b>	Floriculture Nursery and Landscape Agriscience Fair Agriculture Issues

**Learning Objective:** The goal of this activity is to develop a student’s understanding to identify a variety of flowering and vegetative plants for an indoor setting. Students will gain an understanding of how to properly classify, propagate, install and maintain healthy plant materials. Discussions, reading, researching, visual identification and writing exercises are coordinated in class to help students construct a technical understanding of both flowering and vegetative plants. Students will use this knowledge to create a Quick Reference Guide.

The following should be used during this teaching:

- Essays should be evaluated using the Tennessee 9-12 Literacy Informational/Explanatory Rubric, found at [http://www.tncore.org/literacy\\_in\\_science\\_and\\_technology/assessment/scoring\\_resources.aspx](http://www.tncore.org/literacy_in_science_and_technology/assessment/scoring_resources.aspx).
- For information on how to develop text-dependent questions for rich classroom discussion, visit [http://www.tncore.org/literacy\\_in\\_science\\_and\\_technology/curricular\\_resources/text\\_dependent\\_questions.aspx](http://www.tncore.org/literacy_in_science_and_technology/curricular_resources/text_dependent_questions.aspx).

**CTSO Competition Overview:** Students can use the knowledge and resources gained through research to compete in the FFA Career Development Events (CDE) listed below. Visit the [TN FFA](http://www.tnffa.org) website for more information and to download the 2012-2016 CDE Handbook guidelines.

- Floriculture
- Nursery and Landscape
- Agriscience Fair
- Agriculture Issues

Texts	Text Complexity Analysis
<p><b>Text 1 Title:</b> “Indoor Plant Care”</p> <p><b>Author:</b> Rosie Lerner, Purdue University Cooperative Extension Service</p> <p><b>Citation/Publication Information:</b> Lerner, Rosie. “Indoor Plant Care”. <i>Purdue University Cooperative Extension Service</i>. May 2001.</p> <p><b>Link:</b> <a href="http://www.hort.purdue.edu/ext/ho-39.pdf">http://www.hort.purdue.edu/ext/ho-39.pdf</a></p>	<p><b>Quantitative:</b> Lexile: 1040</p> <p><b>Qualitative:</b> This article demonstrates a multiple level purpose with simple structure. The article is conversational with domain-specific language. The knowledge demands should be manageable for students with strong plant science or biology foundation skills.</p> <p><b>Reader and Task:</b> These are to be determined locally with reference to such variables as student’s motivation, knowledge and experiences as well as the task assigned and the questions posed.</p>
<p><b>Text 2 Title:</b> “Disease and Cultural Problems of Houseplants”</p> <p><b>Author:</b> John Hartman and Brian Eshenaur</p> <p><b>Citation/Publication Information:</b> Hartman, John and Brian Eshenaur “Diseases and Cultural Problems of Houseplants”. <i>University of Kentucky – Cooperative Extension Service</i>. Revised Aug. 2004.</p> <p><b>Link:</b> <a href="http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-H-4.pdf">http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-H-4.pdf</a></p>	<p><b>Quantitative:</b> Lexile: 1570</p> <p><b>Qualitative:</b> This article’s complexity rests with its technical vocabulary. However, content should be understandable to most students and graphics and tables help access material.</p> <p><b>Reader and Task:</b> Comprehension strategies may be necessary to fully understand the content of this article including the interpretation of Table 1.</p>

TN State Standards: ELA/Literacy in Science and Technology addressed by task	
Strand	Grades 11-12
TN Reading for Technical Subjects: Key Ideas and Details	<p><b>1.</b> Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.</p> <p><b>2.</b> Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p>
TN Reading for Technical Subjects: Craft and Structure	<p><b>4.</b> Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</p>
TN Reading for Technical Subjects: Integration of Knowledge and Ideas	<p><b>7.</b> Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p><b>9.</b> Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>
TN Writing for Technical Subjects: Text Types and Purposes	<p><b>2.</b> Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.*</p> <ul style="list-style-type: none"> <li>a) Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</li> <li>b) Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</li> <li>c) Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</li> <li>d) Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that response to the discipline and context as well as to the expertise of likely readers.</li> <li>a) Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</li> </ul>
TN Writing for Technical Subjects: Production and Distribution of Writing	<p><b>4.</b> Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
TN Writing for Technical Subjects: Research to Build and Present Knowledge	<p><b>9.</b> Draw evidence from informational texts to support analysis, reflection, and research.</p>

Tennessee CTE Standards addressed by task	
Landscape and Turf Science	<b>10.</b> Identify and classify basic ornamental flowers and plants used for the commercial interior plantscape, and summarize their propagation, installation techniques, and maintenance requirements, citing applicable technical texts.

\* Standards noted with an asterisk (\*) will only be covered if this activity is conducted as a longer-form lesson and research project that would culminate in a report or paper. Other standards may be covered and/or assessed through using this activity as an assessment or writing prompt.

What key insights should students take from these resources?	
	<ul style="list-style-type: none"> <li>Identify basic ornamental flowers and plants used in interior settings.</li> <li>Describe the propagation, installation methods and maintenance requirements.</li> </ul>
Text-Dependent Questions	
Text 1	<ol style="list-style-type: none"> <li>According to the article, what are the differences in growth requirements between indoor and outdoor flowering and foliage plants?</li> <li>What is included on the list of cultural requirements to maintain a quality flowering or foliage plant? What does the word “cultural” mean?</li> <li>In the article, the author highlights cultural methods and preventative care as being vital to healthy plants. What are the main cultural methods to maintain high quality indoor plants for any indoor environment?</li> <li>When an indoor plant reaches a preferred size, what recommendations are referenced in the article to maintain the plant year-round? Based on the available evidence, which of these recommendations is most likely to be successful?</li> </ol>
Text 2	<ol style="list-style-type: none"> <li>According to the article, several fungal and bacterial diseases were identified by symptoms. Which diseases were highlighted? What are the symptoms of each?</li> <li>What are possible causes of common diseases?</li> <li>What does the word “soilborne” mean? If an organism is “soilborne,” what do we know about it? What part of the plant do “soilborne” organisms impact?</li> <li>What does the word “abiotic” mean? How is it used in the article and what is its significance?</li> </ol>

Writing Prompt	
Informative	<p>You were hired to maintain the indoor plants in the high school library during your senior year. It is nearly graduation, and your librarian has come to you to let you know that a new student will be taking over your role the following year. The library contains many different types of indoor plants and the agriculture teacher is concerned the student who will be responsible may not be familiar with the needs of the different types of plants. For each plant, compose a one-page hand-out (“Quick Reference Guide”) to provide to the librarian to ensure the new student worker is providing the best care possible for the plants in the library. Use evidence from the texts to create your document.</p>
Additional Resources	
<p><b>Current course textbook</b></p> <p><b>Suggested Additional Website References:</b></p> <p><a href="#">Better Homes and Gardens</a> Online Plant Encyclopedia</p> <p><a href="#">OnlinePlantGuide.com</a> Free online plant guide search engine</p> <p><a href="#">FFA Floriculture Career Development Event Rules</a> National FFA Organization</p> <p><a href="#">FFA Nursery and Landscape Career Development Event Rules</a> National FFA Organization</p> <p><a href="#">Information About Flowers</a> About.Com Flowers</p> <p><a href="#">Horticulture Crop Data Base</a> United States Department of Agriculture (USDA)</p>	

**Potential Lesson Plan Design:**

**Day 1**

**Bell-Ringer:**

Display a variety of flowers and foliage plants in the classroom, or in an on-screen presentation format, and have your students make their best educated guess to identify the name, type of best method of propagation, and lighting requirement of each plant. After giving the students two to three minutes to complete the identification on their own paper, the teacher will identify the plant, propagation method and lighting requirements with student input.

**Instructional Component:**

Read the first two texts (“Indoor Plant Care” and “Disease and Cultural Problems of Houseplants”) in their entirety. Discuss the main idea of the text. The first read establishes a first familiarity with the text for students. Teacher should read the text prior to the lesson to become familiar with the text and the main idea.

- Read the text in its entirety. Read the text straight through and underline new technical terms. Review or provide some context for technical or unknown words.
- When finished reading, discuss the main idea of the text.

Text Under Discussion	Sample Teacher Dialogue & Guiding Questions
Read the two texts	<p>After reading the text aloud, ask the students, “What is the main idea?”            Have students give evidence from the text to support the main or subheading idea, encourage students to return to the text.</p> <p><i>Examples of teacher questions that draw students back into the text:</i>            “What are the cultural requirements for indoor plants?”            “How do you know?” “What examples from the text support this?”            “What words in the text make you think that?”            “Where did you see that in the text?”</p>

**Ideas to Check for Understanding**

- Have students identify the main cultural aspects for indoor plant care.
- Have students explain one of the diseases outlined in the text.

**Day 2****Bell Ringer:****Teacher will ask the following questions:**

- What was one of the cultural requirements to maintain healthy plants in an interior plantscape? Why is that important?
- From yesterday's text, what was one of the diseases affecting indoor plants? Explain how the disease affects plants.

**Instructional Component:**

- Discuss with the students the expectation of the Quick Reference Guide.
  - Allow students to select a minimum of 10 plants, to include flowering and foliage plants, within four different growing conditions. (i.e. hot and dry, low light, direct light, etc.) Note: Additional plants can come from the Floriculture and the Nursery and Landscape Career Development Event plant list.
  - Quick Reference Guide must include at least:
    - plant common and scientific name
    - flower or foliage characteristics
    - propagation method
    - installation techniques
    - maintenance tips
    - major insects and controls
    - major diseases and controls
- Teacher will exhibit examples of a completed Quick Reference Guide and answer any questions.
- Teacher will provide additional references to use to complete the research. This can be in addition to the resources listed in this document.
- Teacher will monitor the progress of the class as the students work on developing their Quick Reference Guide.

**Ideas to Check for Understanding**

- Have students identify the information to include on each plant.
- Using live plant material or pictures of plants, have the student identify at least five plants and include two other Quick Reference Guide areas.

**Day 3**

Continue working on the Quick Reference Guide.

- The teacher should walk around, monitoring student progress.
- The teacher will have a couple of students review the information about one of their plants, citing evidence to justify their information.
- The teacher will provide any additional resources based on student's recommendation.

- The teacher will monitor student progress as students work on developing their Quick Reference Guide.

**Ideas to Check for Understanding**

- Have students identify the information to include on each plant.
- Using live plant material or pictures of plants, have the student identify at least five plants and include two other Quick Reference Guide areas.

**Day 4: Continue working on the Quick Reference Guide.**

- The teacher will select one plant from each student’s list which the student will present to the class.
- Teacher will monitor the progress of the class as the students work on developing their Quick Reference Guide.
- Teacher should encourage students to review each other’s work and submit feedback to each other and should encourage students to incorporate feedback by reviewing and revising their work.

**Day 5: Presentation and Submission of Quick Reference Guides.**

- Students will present their selected plant to the class. Other students will build upon the information presented, if able.
- Quick Reference Guides will be submitted.

**Discussion:** These texts could be explored orally and used to form the basic foundation of a lesson or series of lessons. Close-reading questions should be developed in advance in order to drive student understanding of the material while also practicing reading skills. For information on how to develop questions for this type of discussion, visit [http://www.tncore.org/literacy\\_in\\_science\\_and\\_technology/curricular\\_resources/text\\_dependent\\_questions.aspx](http://www.tncore.org/literacy_in_science_and_technology/curricular_resources/text_dependent_questions.aspx).

**Scaffolding and support for students with special needs, English language learners, and struggling readers:** Consider pre-teaching synonyms of difficult vocabulary words. Lower-level readers and ELL students can still be challenged without being overloaded with difficulty. This strategy can also be used to differentiate for stronger readers by introducing new, and more challenging, vocabulary. Struggling readers would also benefit from visual aids to illustrate many of the ideas presented. Pictures, diagrams, and charts alongside the text will go far to aid students as they dissect the articles.

**Note:** Social, ethnic, racial, religious, and gender bias is best determined at the local level where educators have in-depth knowledge of the culture and values of the community in which students live. TDOE asks local districts to review these materials for social, ethnic, racial, religious, and gender bias before use in local schools.



Sample: Interior Plants Quick Reference Guide

Student Name: \_\_\_\_\_

Common Name: \_\_\_\_\_ Scientific name: \_\_\_\_\_

Flower or foliage characteristics:

Propagation method:

Installation techniques:

Maintenance tips:

Lighting:

Watering:

Fertilizing:

Other:

Major insects and controls methods:

Major diseases and controls methods: