

# Unit 01: Greenhouse Management

Content Area: **Template**  
Course(s):  
Time Period: **Full Year**  
Length: **FY**  
Status: **Published**

## Standards Alignment

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### New Jersey Student Learning Standards

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#### Integration of Career Readiness, Life Literacies and Key Skills

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CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP3	Attend to personal health and financial well-being.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP10	Plan education and career paths aligned to personal goals.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

#### Technology / Integration of Computer Science and Design Thinking

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TECH.8.1.5	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.5.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
TECH.8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
TECH.8.1.5.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

TECH.8.1.5.C.1

Engage in online discussions with learners of other cultures to investigate a worldwide issue from multiple perspectives and sources, evaluate findings and present possible solutions, using digital tools and online resources for all steps.

## **Interdisciplinary Connections: NJSLs for ELA, Social Studies, Science and/or Math Section**

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LA.RL.3	Reading Literature Text Key Ideas and Details
LA.RL.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
LA.K-12.NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.  Craft and Structure
LA.RL.3.4	Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.
LA.K-12.NJSLSA.R4	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
LA.RI.3	Reading Informational Text
LA.RI.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

## **Integration of Diversity, Equity and Inclusion; Climate Change; Informational and Media Literacy New Section**

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see Crosswalks

## **21st Century Life and Careers**

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### **Stage I: Desired Results**

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### **Transfer/Overview/Rationale**

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#### **Transfer / Overview / Rationale**

Unit Rationale

The purpose of this unit...

In order to be successful within the vocational setting, students are encouraged to be assigned various tasks and exposed to various jobs. The school greenhouse enables students to learn unfamiliar tasks pertaining to both horticulture and agriculture. Multiple concepts are involved with tending the greenhouse such as following multi-step directions, understanding a planting and watering schedule, as well as collaboration with peers and adults. By having an understanding of the jobs necessary to run the greenhouse, students will be better able to participate more functionally within the vocational setting and develop the needed skills pertaining to job specific tasks. Due to the varying strengths, abilities, weaknesses and experiences of the students in this program, certain skills may have been mastered by some students and not introduced to others. Instructors should modify instruction accordingly.

## **Meaning**

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### **Essential Questions**

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#### Essential Questions

- Do I understand the need and role of agriculture in the world's food supply?
- Do I understand basic plant growth and development?
- Can I identify what plants need to grow and require additional tending to?
- Can I receptively and expressively label the parts of plants?
- Do I know how to differentiate between the various plants grown in the greenhouse?
- Do I have the skills necessary to transplant plants to different receptacles?
- Can I receptively and expressively label the common tools used in the greenhouse as well as their function?

### **Enduring Understanding/Indicators of Understanding**

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#### Enduring Understanding/Indicators of Understanding

- The development of unfamiliar vocational tasks are crucial for students to be able to perform various job specific tasks in multiple work environments with the least amount of support.
- Being able to learn and perform new tasks pertaining to managing a greenhouse are important steps to expand vocational skills and to help students identify job related interests.
- Mastery of skills used on a daily basis such as checking planting and watering schedules, collaborating with peers and adults, as well as following multi-step directions are necessary in order to be as successful and independent as possible within the work environment.

## **Acquisition (Student Learning Objectives)**

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### **Knowledge**

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#### Knowledge

Students will know...

- The student will know why humans grow plants and how they support various parts of the world's ecosystem (humans eat plants and animals, animals eat plants or other animals that eat plants, etc...)
- Students will be able to identify the flower, stem, leaves, and roots on plants
- The students will be able to accurately identify and locate all the necessary items to grow a plant (e.g., seed, soil, shovel, spade, pot, water, etc...)
- Students will know how to follow a visual schedule or task analysis to complete necessary steps to complete teacher specified greenhouse related tasks
- Students will be able to utilize a calendar to accurately determine when each task needs to be completed in the greenhouse (e.g., watering, seedling/plant transplant, pruning, temperature check, etc...)
- Student will be able to label the different plants being grown in the greenhouse or how to find out their location (i.e., check labels, ask teacher for help, etc...)
- When shown a picture or object, the student will identify various Garden items by pointing to the name/item when asked or stating the name of the item aloud.

### **Skills**

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#### Skills

Student will be skilled at ...

Basic Greenhouse Knowledge:

- The student will be able to identify basic greenhouse items and tools as well as their function.
- The student will be able to locate basic greenhouse items as well as know when to use them.
- The student will be able to label the plants in the greenhouse or know how to find where they are located.
- The students will be able to accurately identify and locate all the necessary items to grow a plant (e.g., seed, soil, shovel, spade, pot, water, etc...).

Plant Knowledge:

- The student will know and understand the reasoning behind growing plants and why they are important for society.
- Students will be able to identify the flower, stem, leaves, and roots on plants
- When shown gardening/horticulture related sight words, the student will receptively identify (point to, touch,

retrieve) the written word, read the words aloud and demonstrate comprehension by matching the word to the corresponding item or representative photograph.

Fulfilling Duties in the Greenhouse:

- Students will know how to follow a visual schedule or task analysis to complete necessary steps to complete teacher specified greenhouse related tasks
- Students will be able to utilize a calendar to accurately determine when each task needs to be completed in the greenhouse (e.g., watering, seedling/plant transplant, pruning, temperature check, etc...)

## **Stage 3: Learning Plan**

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### **Resource and Mentor Texts**

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#### Resources and Mentor Texts

RESOURCES:

<http://www.projectpa.org/ppa-v3/index.php/2012-05-21-07-50-39/farm-to-school-promising-practices/23-farm-to-school/promising-practices/85-using-a-school-garden-to-teach-special-needs-children-pine-richland-high-school>

<https://kidcompanions.com/benefits-of-gardening-for-children-with-autism-and-special-ed-needs/>

<http://educationassociates.com/curriculum-motivates-adult-students-with-special-needs/>

<https://www.autismspeaks.org/family-services/adult-services/autism-and-employment>

<https://www.kidsgardening.org/create-sustain-a-program-designing-garden-programs-for-all/>

<http://my.chicagobotanic.org/education/therapy/gardening-and-autism/>

<http://www.speciallearninghouse.com/6-tips-to-make-gardening-with-children-with-autism-easy-fun/>

<http://www.proflowers.com/blog/horticulture-therapy-flowers-and-plants-help-autistic-children>

<https://everythingbackyard.net/gardening-kids-autism-spectrum-disorder/>

<http://www.lifelab.org/for-educators/schoolgardens/>

<https://www.youtube.com/user/lifelabvideos#grid/user/D6F98D377BF77812>

<https://www.thespruce.com/success-tips-for-transplanting-and-moving-gardens-1402470b>

## **Formative Assessment Strategies**

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Formative Assessment Strategies

Task Analysis

Teacher generated quizzes and checklists

Student Self-Assessments

## **Learning Activities/Unit of Study**

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Learning Activities/Unit of Study

Provide the student with 3-5 familiar and unfamiliar pictures. When possible, distractor pictures should be contextually related or have a similar appearance. Provide the student with the target item. One picture should be presented at a time.

- “Find the one that has (state the feature(s))” e.g., “Find the one that has a handle and a pointy end.” Variations: Touch \_\_, Show me \_\_, Where is \_\_, Point to \_\_, etc.

- “What is it?” Variations: What is this?, What is this called?, etc.
- “What has (state the feature(s))” : Tell me something with a (state the features), What has a (state feature), etc.
- “What does a (name the item) have?” Variations: “A (name item) has \_\_\_\_\_,” “What does a (name item) look like?”
- “Find the one that has (state the function(s)) e.g., “Find the one that is for digging.” Variations: Touch \_\_, Show me \_\_, Where is \_\_, Point to \_\_, etc.
- “What is used for (state the function(s))” Variations: Tell me something you use for (state the function), Tell me something that does (state the function), etc.
- “What does a (name the item) do?” Variations: “A (name item) is used for \_\_\_\_\_,” “What is a (name item) for?”

Provide the student with 3-5 familiar and unfamiliar sight words. When possible distractor words should be contextually related or have similar letter combinations/spelling.

- “Find (state the word)” Variations: Touch \_\_, Show me \_\_, Where is \_\_, Point to \_\_, etc.

Provide the student with the target word only. One word should be presented at a time. If a list is used, staff should block other words or point to target word.

- “Read (do not say word)” Variations: What does this say?, What is this word?, etc.

Provide the student with 3-5 pictures/items corresponding to the sight words. When possible distractor items/pictures should be contextually related/similar items. Provide the student with the target word only.

- “Match (DO NOT READ WORD TO STUDENT)” Variations: Find/Get/Show me this one

#### Greenhouse tasks

- Provide students with a visual schedule or task analysis to enable them to complete the necessary steps to complete greenhouse related tasks with minimal assistance.
- Provide students with a calendar to determine when certain greenhouse tasks need to be completed and by whom (e.g., watering, seedling/plant transplant, pruning, temperature check, etc...)
- Jobs should be rotated on a specified schedule enabling all students to learn the various duties involved with greenhouse management

## **Modifications and/or Accommodations**

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### **Suggested Modifications (ELL, Sp. Ed, Gifted, At-risk of Failure)**

#### **English Language Learners**

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

#### **Special Education Students**

Chunking: The teacher presents information in a way that makes it easy for students to understand and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

Checking for Understanding: It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

Extra time: The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

Oral Reading: The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

Timers: The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

#### **Students with 504 Plans**

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overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

**Checking for Understanding:** It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

**Extra time:** The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

## **Gifted & Talented Strategies**

**Extensions/Enrichments:** Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

**Modify/Change Activities:** Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

## **Students at Risk of School Failure**

**Directions or Instructions:** Make sure directions and/or instructions are given in limited numbers. Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

**Peer Support:** Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

**Alternate or Modified Assignments:** Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

**Increase One to One Time:** When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

**Contracts:** It helps to have a working contract between you and your students at risk. This helps prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

**Hands On:** As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

**Tests/Assessments:** Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

**Seating:** Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.