LCI learner-centered initiatives
www.lciltd.org

Completed Curriculum-Embedded Performance Task Template

Structures and Systems (4th Grade ELA & Science)

This completed assessment template for Structures and Systems was developed by Learner-Centered Initiatives to support teachers who use the LCI Template for Curriculum Embedded Performance Tasks. The template includes the description of the performance tasks, related diagnostic and formative assessments, standards and outcomes addressed, scoring rubrics, and both a descriptive summary and checklist of the quality attributes of this task.

Title:	Structure and Systems
Author(s):	Learner-Centered Initiatives, Ltd.
Essential Question:	What makes a structure a system? Content guiding question: How does the structure of a plant help it to grow and survive?
Big Idea/Enduring Understanding:	Unit big idea: Students understand that structures exist all around them that help people, places and things operate as a system. Content big idea: Students understand that plants have internal and external structures that work together so the plant can grow and survive.
Teacher(s) who will implement the assessment: (if different from above)	
Brief Description of the Assessment: • What will the students do? • How is the assessment embedded in the curriculum? • How is the performance assessment (summative) connected to the diagnostic and formative assessments? • How will the formative assessments allow for teacher and peer feedback and/or student self-assessment?	This curriculum-embedded performance assessment sits inside a unit of study in which students study structures and systems through different disciplines. In this science inquiry, students examine how the structures of the plant help it to grow and survive under different conditions. As a result, students create a picture book, article or lesson plan that they can share with first grade students who are just beginning to learn about plants, their parts and how they grow. The diagnostic assessment for the science segment of this unit is used to determine what students know about plants and how they grow and survive. The teacher uses student responses to create differentiated groups where all students study how plants use their internal and external structures to grow and survive but under different conditions. The formative assessment for this curriculum-embedded assessment is a science journal that students use to document their observations and research of plant growth and development. The teacher checks

	students' journal to provide them with feedback and determine next steps in instruction. The second formative assessment is a draft of the students' picture book, article or lesson. Students receive feedback from their peers and teacher before revising and submitting their final drafts. Students can choose the vehicle for sharing their information. For equity purposes, the same rubric is used to assess all three options.
Brief description of how the results/evidence will be used by the teacher:	Student responses in their science journals are documented by the teacher to determine completion and understanding of the unit concepts. The teacher can then use this information to determine areas in need of further instruction and share it with other teachers who may provide support to individual students within the classroom. The final performance task is used to produce and measure learning. The product the student chooses to create is intended to help them solidify their thinking about how internal and external structures enable plants to grow and survive. The finished product is used to determine student understanding of science concepts and their ability to write to construct an argument. The final piece is assessed for grading and reporting purposes.

Analysis of a Curriculum-Embedded Performance Assessment: A quality curriculum-embedded performance assessment embodies the following traits. The Structure and Systems performance assessment has been explained in relation to these qualities.

- □ **measures the most important learning.** The most important learning in this unit has been articulated through its organizing center – the unit's title, essential question and big idea. In this unit, students examine the large question – what makes a structure a system? – through different disciplines. The specific focus in science is for students to examine how the structures of a plant allow it to operate as a system to grow and survive. (validity)

- □ **strongly aligns to the standards.** The standards for the unit are explicitly aligned to the pre-assessment, formative assessments and summative assessments, as demonstrated through the coding of the standards in the task itself. The standards for this assessment include both the common core standards for reading and writing, the Next Generation Science Standards and related disciplinary core idea, science and engineering practices, and cross-cutting concepts. Standards alignment in this assessment is particularly important because the assessment is differentiated, and in order to ensure equity, all options must allow the students to demonstrate the same expectations. (validity)

- □ **includes specific criteria for performance.** Criteria for performance are articulated through both the assessment description and the rubric for the performance task. The criteria are strongly aligned to the standards, as shown through the coding in the descriptions and in the rubric itself. The same rubric can be used to evaluate any of the assessment options, children's book, write an article for a science journal, or create a teaching tool and lesson plan. (reliability)

- □ **has an authentic audience and purpose.** The first grade students serve as the authentic audience for all three assessment options. First grade students can use the information presented in their own study of plant structures, which serves as a precursor to what they will learn in fourth grade. The assessment requires students to engage high levels of thinking as they are first required to plan and carry out a science experiment, and then use the results as well as outside research to create a tool for sharing that information. (authenticity, thinking demand)

- □ **includes diagnostic and formative assessment moments.** The diagnostic for this assessment is used to determine student background knowledge of plant growth. This information is used by the teacher to determine the groups for the science investigation. Student journals serve as formative assessments that the teachers use to monitor student understanding and plan for instruction. Students have the opportunity to draft their children's book, science article, or lesson plan and receive feedback from the teacher prior to the revision and publication to their work.

Standards/Outcomes Assessed by the Task(s)
Attributes of Quality Assessments: • **Alignment and Validity**
Which standards will you formally assess? • **List and label the CCLS standards, content area standards and any dispositional outcomes that will be assessed.** • **Include any information that identifies the most important learning for the unit.**

Reading Information:

RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.

RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Writing Standards:

W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.
b. Provide reasons that are supported by facts and details.
c. Link opinion and reasons using words and phrases (e.g., *for instance*, *in order to, in addition*).
d. Provide a concluding statement or section related to the opinion presented.

W.4.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 4 on page 38.)

Next Generation Science Standards:

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.] [*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*]

Disciplinary Core Idea:
LS1 – A Structure and Function
Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction.

Science and Engineering Practice: Construct an argument with evidence, data and/or a model

Cross-Cutting Concepts: Systems and System Models
A system can be described in terms of its components and their interactions.

Description of the Assessment Tasks
Attributes of Quality Assessments: • **Authenticity** • **Diversified and Balanced** • **Thinking Demand and Rigor** • **Alignment and Validity**
These assessments will be used to: • **identify what students know or are able to do prior to instruction (diagnostic)** • **monitor student learning (formative)** • **measure what students have learned (summative)** **When describing these assessments identify the standards that align with the task.**
Diagnostic Assessment/Pre-Assessment: ***A pre-assessment must be parallel to the summative or post assessment; meaning it must measure the same standards.*** **Diagnostic:** Students draw, label and explain how plants grow. LS1 – A **Differentiation:** Information from this diagnostic is used to group students based on their understanding of how plants grow and what influences their development.
Formative Assessment Moments **Formative Assessment – Science Journal:** Students work in small groups to study how plants use internal and external structures to grow and survive (LS1 – A). Each group creates a terrarium and documents growth and development under different conditions. In their documentation they include: • explanations of how plant structures help them grow and survive • illustrations of the plant structures and how they work (RI.4.7) • definitions of different plant structures (RI.4.4) Students compare and further develop their findings with information found in non-fiction texts and resources (RI.4.3) **Differentiation:** ***Content/Materials and Resources:*** Differentiation based on the amount of prior knowledge the students have about the plant life cycle (differentiation based on need). • Group A: observes and documents the growth of plants in one environment based on the plants exposure to light, and intake of water.

- Group B: observes and documents the growth of plants in different environments. They compare conditions in these environments and the effect of light and intake of water on plant growth and development.
- Group C: observes and documents the growth and development of plants when specific conditions are altered in an environment, i.e., the color of the water, the type of light and amount of exposure.

- Students have access to a variety of videos, non-fiction text, and web-based materials to compare their observations.
- Students meet with members of other groups and compare notes on what plants need in order to grow.

Process: Differentiation based on need and learning profile. Students make observations in a journal using pictures, descriptions, prepared plant outlines or graphic organizers.

Summative/Performance Task:

Students work in small groups to create a non-fiction picture book for the first grade that shows the importance of taking care of plants so that they can grow LS1 - A. The first grade students will use the picture books during their own unit on plants in which the first grade students grow lima beans from seeds. In the picture books, fourth grade students

- introduce the topic W.4.1a
- sequence the stages of plant growth W.4.1a
- include information about what influences plant growth W.4.1b
- use the information they share as reasons to convince the first graders of the importance of taking care of their plants and how plant structures help them to survive W.4.1b,
- use linking words and phrases to show order and connect opinions and reasons W.4.1c
- provide a concluding statement or section W.4.1d

Differentiation:

Product: Differentiation based on interest. Students may choose to create a children's book, write an article for a science journal, or create a teaching tool and lesson plan.

Formative Assessment and Feedback Cycle	
Attributes of Quality Assessments: • **Diversified and Balanced** • **Impact on Instruction**	
Column #1: Formative Assessment Moments *What opportunities has the teacher created for formative assessments?*	**Column #2: Feedback Opportunities** *How does the teacher provide feedback or opportunities for peer feedback and self-reflection?*
Formative Assessment – Science Journal: Students work in small groups to study how plants use internal and external structures to grow and survive (LS1 – A). Each group creates a terrarium and documents growth and development under different conditions. In their documentation they include: • explanations of how plant structures help them grow and survive • illustrations of the plant structures and how they work (RI.4.7) • definitions of different plant structures. (RI.4.4) Students compare and further develop their findings with information found in non-fiction texts and resources (RI.4.3)	Science journals are checked intermittently by the teacher to determine students' understanding of how plants' structures help them to grow and survive. The teacher provides individual feedback to help students further elaborate on their information. She plans lessons to address misconceptions and further understanding of how plants grow. Students work in groups to clarify ideas and understanding. The teacher checks in with groups to answer questions and provide scaffolds such as additional resources and tools for documentation. Students work in small groups when examining non-fiction text and add information to their journals. The teacher continues to check with the groups to answer questions and provide resources. The teacher also continues to check students' journals to see how students add information to their notes and to provide feedback and plan for instruction based on her examination of student work.
Draft – Plant book, article or teaching tool: Students complete a draft of their plant book, article or teaching tool before completing their final copy.	The teacher provides students with individualized feedback on their use of information and illustrations, and the clarity of explanations, so they can revise their drafts. Students work with a peer editor before submitting completing their final copies.

Criteria for Formative Feedback and Summative Evaluation with Explicit Standards Alignment

What are the criteria that will guide 1) self-assessment 2) feedback to students and 3) scoring of culminating work?

Attributes of Quality Assessments:

- **Alignment and Validity**
- **Reliability**

	Still working	Almost there	Got it	Wow!
Ideas and Content: LS1 – A Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction. Science and Engineering Practice: Construct an argument with evidence, data and/or a model W.4.1a: Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.	• I listed facts without stating my topic first. • I included information about how plants grow. • I stated it was important to take care of plants.	• I stated the topic I would be writing about in my book, article or lesson. • I explained how plants grow and identified the external and internal plant structures. • I explained what a plants needs to grow and stated that it is important to take care of them.	• I clearly stated my topic and the purpose of my book, article, or lesson. • I explained how plants grow, what influences how they grow, and identified the role of external and internal plant structures. • I used my facts about plants to explain why it is important to take care of plants and how plant structures help them to grow and survive.	• I clearly stated my topic and purpose, and explained the importance of taking care of plants. • I explained how plants grow, what influences how they grow, and the role of external and internal plant structures in their growth and development. • I used my explanations to convince the reader that the plants' structures impact how they grows and the importance of taking care of the plants.

W.4.1b Provide reasons that are supported by facts and details.				
Organization: W.4.1a Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. W.4.1d Provide a concluding statement or section.	• I jump right into my writing without identifying what I am writing about. • My ideas are listed but not organized. • I include information about how plants grow but don't identify the stages. • My writing ends suddenly or I announce the ending to my reader. (i.e.: The end or "That is what I think.")	• I start with the topic I will be writing about in my book, article or lesson. • My ideas are all mixed together. • I include the stages of plant growth but not in order. • I have a concluding statement that says it is important to take care of plants.	• I introduced my topic and the purpose of my book, article or lesson. • I grouped similar ideas together. • I sequenced the stages of plant growth. • I have a concluding statement that is related to the purpose of my book, article or lesson.	• My introduction clearly states my topic and purpose, and explains the importance of taking care of plants. • I grouped my ideas together to make it easier for the reader to follow. • I sequenced the stages of plant growth so they are easy to follow and make connections to how to take care of the plants. • I have a conclusion that is restates the purpose of my book, article or lesson.
Use of Language: W.4.1c Link opinion and reasons using words, phrases.	• I list facts without using linking words to connect them.	• I use linking words to connect my facts but don't make a connection to why it is important to take care of plants.	• I used linking words and phrases such as "for instance, in order to, in addition" to connect my facts and explanation of why it is important to	• I use words, phrases, and clauses to clarify the relationship between how plant structures impact how they grow

RL.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.	• I use familiar plant part labels.	• I use the name of plant parts to explain information.	take care of plants and how plant structures help them to grow and survive. • I use scientific terminology to explain information.	and the importance of taking care of the plants. • I use scientific terminology and definitions to explain information.
Presentation RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	• My writing could be a book, article, or lesson. It includes pictures of plants.	• My writing looks like a book, article, or lesson and includes pictures, or visuals related to the information I included.	• My writing looks like a book, article, or lesson and includes pictures, diagrams and other visuals related to the information I included.	• My writing looks like a book, article, or lesson and includes pictures, diagrams and other visuals to illustrate and clarify important information and connections.
Conventions	• Errors in grammar, punctuation and spelling greatly interfere in comprehension.	• Errors in grammar, punctuation and spelling interfere in comprehension.	• Some errors in grammar, punctuation and spelling but they do not interfere in comprehension.	• Minor errors in grammar, punctuation and spelling but they do not interfere in comprehension.

Examination of Attributes of Quality: The following chart identifies attributes of quality assessments, the degree to which the Structures and Systems curriculum-embedded performance assessment addresses the attribute, and an explanation of the assessments strengths, needs and next steps in relation to the attribute.

Attribute	√-	√	√+	Notes: + strengths ? questions/needs - next steps
Alignment			√+	The standards include reading and writing standards, as well as the NGSS and corresponding disciplinary core idea, science and engineering practices, and cross-cutting concepts. They are explicitly linked to the diagnostic, formative and summative assessment moments. Examination between the tasks and the identified standards reveal strong alignment; the demands and language of the standard have been incorporated into the task.
Diversified and Balanced: Type		√		The assessments chosen are congruent with the identified standards. The curriculum-embedded performance assessment contains a variety of product assessments including the science journal that results from the work completed by the student during the demonstration portion of the assessment when students are working on their terrariums. While the science journal provides an opportunity for students to reflect on their process, it has not been structured to do so.
Diversified and Balanced: Moments		√		This curriculum-embedded assessment includes a diagnostic, formative, and summative assessments. The diagnostic for this assessment is used to determine student understanding of how plants grow and survive so the teacher may place the students in a group based on their background knowledge. There are two formative assessments. The science journal provides the teacher with on-going information about what the students understand about how plants grow and change so the teacher can adjust instruction based on student need. The second formative is a draft of the finished product. The teacher provides students with individualized feedback on their draft so it can be revised before it is shared with the authentic audience.

Impact on Instruction: Feedback			**√+**	The formative assessment cycle identifies opportunities for students to receive feedback and for teachers to adjust instruction based on student need prior to the completion of the task.
Impact on Instruction: Instructional Decisions and Student Needs		**√**		This assessment is designed so that the teacher may address student needs through differentiated instruction and assessment opportunities. While the assessment blueprint describes how the information should be used to differentiate in the classroom, there is no information about how the assessment will be shared with support teachers so they may assist specific students or sub-groups of students.
Authenticity			**√+**	The performance task is authentic, as the primary audience is first grade students who are also learning about plants.
Thinking Demand			**√+**	The assessment requires high levels of thinking because the students are synthesizing information in order to create a finished product.
Reliability		**√**		An explicitly aligned rubric has been included. The rubric would benefit from the addition of annotated student work.