



Fairchild Challenge at Phipps

2019 – 2020 High School Challenges In-Depth

Challenge I: Art and Writing

“Wish You Were Here”

For individuals or groups | Maximum points: 200 (100 points/submission)

Due at Phipps: Friday, October 4 by 5 p.m.

Your Challenge:

“If one truly loves nature one finds beauty everywhere.”
- Vincent van Gogh in a letter to Theo van Gogh, 1847

Vincent van Gogh often used nature as inspiration for his artwork. Some of his famous nature scenes include *Wheat Field with Cypresses*, *Olive Trees*, and *Irises*. Along with painting these breathtaking natural scenes, he also wrote many letters to his brother, Theo van Gogh describing them in vivid detail. For this challenge, choose a favorite nature spot or scene from your own life and write a one-page letter to a friend describing it. Use imagery and descriptive language to “paint a picture” with your words. Pair the letter with an original painting or drawing of the scene, using van Gogh’s style of bold brushstrokes and contrasting colors if you wish.

The art piece can be created using any medium, but must be two-dimensional. The finished art work should be no larger than 12”x16”. Letters should be typed or neatly hand-written in first-person and should be no longer than one page, single-spaced with 1-inch margins.

Resources: The following list of online resources may be used when preparing your entry:

- *The Letters of Vincent van Gogh* by Vincent van Gogh and Mark W. Roskill
- [Van Gogh in Bloom, Phipps 2019 Summer Flower Show](#)

Entry Requirements: Deliver to high school program coordinator at Phipps in person or via certified mail (electronic submission is not accepted):

- Challenge Entry Form
- Create a two-dimensional artwork of a natural scene, no larger than 12”x16”
- Write a one-page first-person letter to a friend describing your natural scene. Letter may be typed or neatly hand-written and should be single spaced with 1-inch margins.
- Please include the school name and a list of the students involved in the project.

- Maximum Entry: Two letters, each with an accompanying artwork

School Submits: Two letters with two accompanying art pieces, Challenge Entry Form

Select student artwork will be displayed in the Center for Sustainable Landscapes Gallery.

State Standards:

9th and 10th Grades

- CC.1.4.9-10.A Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
- CC.1.4.9-10.B Write with a sharp distinct focus identifying topic, task, and audience.
- CC.1.4.9-10.D Organize ideas, concepts, and information to make important connections and distinctions; use appropriate and varied transitions to link the major sections of the text; include formatting when useful to aiding comprehension; provide a concluding statement or section.
- CC.1.4.9-10.E Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing.
- CC.1.4.9-10.F Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.

11th and 12th Grades

- CC.1.4.11-12.A Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
- CC.1.4.11-12.B Write with a sharp distinct focus identifying topic, task, and audience.
- CC.1.4.11-12.E Write with an awareness of the stylistic aspects of composition. • Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing.
- CC.1.4.11-12.F Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
- 9.1.12.E Delineate a unifying theme through the production of a work of art that reflects skills in media processes and techniques.
- 9.1.12.F Analyze works of arts influenced by experiences or historical and cultural events through production, performance or exhibition.
- 9.2.12.A Explain the historical, cultural and social context of an individual work in the arts.

Keystone Final Assessments:

- C.IE.1.1 Write informative and explanatory pieces that describe, explain, or summarize information or ideas.
- C.IE.2.1 Revise writing to improve style, meaning, word choice, and sentence variety.
- C.IE.3.1 Use conventions of standard written language.

Challenge 2: Global Challenge – Field Data Collection

“Shade our Schools – Leaves Are Cool!”

For groups | Maximum Points: 200

Due at Phipps: Friday, November 15 by 5 p.m.

Fairchild Global Challenge: The Fairchild Global Challenge is distributed to the many Fairchild Partner Sites (such as Phipps) by the Fairchild Tropical Botanic Garden (FTBG) in Miami, Florida. Because this challenge is posed to Fairchild Partner Sites around the world, it provides the opportunity for students to have a wider and stronger impact. In this year’s Global Challenge, students from around the world will collect data that will be used by a scientist at the University of Miami.

Your Challenge: In order to understand and predict how plant species are affected by global warming, we need to understand how temperature impacts a plant’s ability to carry out its basic functions. Despite rising ambient temperatures, plants are able to use different characteristics and mechanisms to regulate their leaf temperature. This year, students will help a scientist from the University of Miami conduct a series of experiments to understand how leaf size, shape and color affect leaf temperature. Students will collect data and create an illustrated field journal documenting their observations.

Resources: The following list of online resources may be used when preparing your entry:

- [Types of plants \(video\)](#)
- [Basic Leaf ID Information](#)
- [How to conduct a biodiversity survey](#)
- [ETEKCITY Non-Contact Thermometer](#) (Phipps will have some thermometers available to borrow.)
- [Shade Our Schools Protocol](#), [Shade Our Schools Data Sheets](#)

Entry Requirements: Deliver to high school program coordinator at Phipps in person or via certified mail (electronic submission is not accepted):

- Challenge Entry Form
- Data Requirements:
 - Collect temperature data for leaves of different colors, different shapes and different sizes as per Shade Our Schools protocol
 - Students must collect temperature measurements for **at least** three leaves per variable (color, shape and size)
 - Data sheets must be filled out completely (including the “notes” section)
 - Data sheets must include the temperature measurements for the reference

- Complete data set must be submitted with Field Journal
- On-time entry submission (late entries may not receive points)
- Field Journal Requirements:
 - Title page of field journal must clearly indicate school name, teacher name(s), and how many students or classes were involved in the collection of data and the creation of the journal
 - Field journal must include a combination of text, labeled drawings, photos and graphs summarizing the results
 - Field journal must include an analysis of the results and conclusions
 - Field journal must be 8.5" x 11" or less, and 12 double sided pages or less, excluding the front and back cover pages. Pages cannot include additional attachments or be used as pockets
 - On time entry submission (late entries may not receive points)
- Maximum Entry: One Field Journal with data sheet

** Leaves that have stopped photosynthesizing and have changed color due to the season change **should not be used** for color comparison. Students can compare leaves that are light and dark green, or other colors as long as they are photosynthesizing and otherwise healthy.*

School submits: Challenge Entry Form, One Field Journal, Data Sheet (Google Sheet provided by FTBG or hardcopy)

State Standards:

9th and 10th Grades

- CC.3.5.9-10.C Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
- CC.3.5.9-10.D 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 grades 9–10 texts and topics.
- CC.3.6.9-10.F Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

11th and 12th Grades

- 3.1.12.A1 Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
- 3.1.12.C2 Analyze how genotypic and phenotypic variation can result in adaptations that influence an organism's success in an environment.
- 3.1.12.C4
 - Examine the status of existing theories.
 - Evaluate experimental information for relevance and adherence to science processes.
 - Judge that conclusions are consistent and logical with experimental conditions.
 - Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution.
 - Communicate and defend a scientific argument.
- CC.3.5.11-12.C Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
- CC.3.5.11-12.D 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 grades 11–12 texts and topics.
- CC.3.6.11-12.F Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Keystone Final Assessment:

- BIO.A.4.2 Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments.
 - BIO.B.4.2.4 Describe how ecosystems change in response to natural and human disturbances (e.g., climate changes, introduction of nonnative species, pollution, fires).
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