Collection Video

Collaborative Collection Development

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Introduction

One of the greatest tragedies of the COVID-19 pandemic is "learning loss." According to a review of the 2023 Virginia Standards of Learning (SOL) assessment results by the *Cardinal News*, only 18 of 132 school divisions exhibited an increase in pass rates on at least one subject area compared to pre-pandemic results (Rowen, 2023). Only one of those increases was in science (Lexington City increased from 83.19% to 88.82%). Rowen provides a graphic that indicates that overall Virginia average science pass rates have fallen from just over 81% in 2019 to approximately 67% in 2023. For Point O'View Elementary School in Virginia Beach, Virginia, the pass rate for grade 5 science in 2023 was 38%. In elementary science, the Grade 5 Science SOL assessment is based on science standards for grades 4 and 5. The test blueprint indicates that approximately 6-7 questions or 12-14% of the assessment will be based on Grade 4 SOLs that are about plants (Virginia Department of Education, 2021). Therefore, the scope of this collection for Point O'View Elementary School's library will be bounded by the text of the Grade 4 Science SOLs 4.2, 4.3, and 4.8 that refer to plants. We believe that focusing on science (specifically plants) and ensuring materials are available in the library for the classrooms will help raise the SOL test scores. According to the VDOE (2018), the SOLs related to plants in Grade 4 Science state:

> 4.2 The student will investigate and understand that plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive. Key ideas include
>
> a) the survival of plants and animals depends on photosynthesis;
>
> b) plants and animals have different structures and processes for obtaining energy; and
>
> c) plants and animals have different structures and processes for creating offspring.

4.3 The student will investigate and understand that organisms, including humans, interact with one another and with the nonliving components in the ecosystem. Key ideas include

a) interrelationships exist in populations, communities, and ecosystems;

b) food webs show the flow of energy within an ecosystem;

c) changes in an organism's niche and habitat may occur at various stages in its life cycle; and

d) classification can be used to identify organisms.

4.8 The student will investigate and understand that Virginia has important natural resources. Key resources include

a) watersheds and water;

b) plants and animals;

c) minerals, rocks, and ores; and

d) forests, soil, and land.

Process Summary

Our group decided to select materials and resources based on meeting the criteria set forth by the Virginia SOLs. We each did research and found one item from the required media: print, nonprint, university or small presses, community resources, primary sources, and realia. Individually, we assessed each item for currency, relevance, authority, accuracy, and purpose to ensure that we would include resources that would potentially increase student achievement on the Grade 5 Science SOL assessment. After we had identified our individual choices, we put them into a GoogleDoc to share and be viewed by one another. By compiling a list of resources

individually, we were able to identify a diverse group of resources, which broadened the material from which to compile a list of fifteen resources. We then met virtually to discuss our resources and collaborate to develop a final list of fifteen items required for this collection. See Appendix A for the budget breakdown.

During our virtual meeting, we evaluated each of the resources on our list. We started by categorizing all of the items into the type of media. Each member of the group made the case for each item they selected, reviewing the selection tools utilized in each case. We also stated which SOL(s) was supported and how that support was provided. Once the case was made for each item, we chose our fifteen resources based on the content the resource could offer in achieving a stated SOL goal, the quality of the resource, the age of the resource, and the audience (grade 4 students).

Some resources were excellent choices, but those not selected did not address the goal to improve students' understanding of plant life as well as others. Other resources varied in the manner in which they would appeal to different types of learners. For example, students who learn better with hands-on experiences may benefit from in-person field trips that we chose to add to our collection. Students who process information better with auditory support may benefit from the read-along book we chose.

In each case, we were mindful of the user when we selected the resources for this collection. We chose books based on interest, accuracy, authority, and reading level, being careful to vary the reading level to provide access points for all students in the grade level. For nonprint resources, we tried to provide a variety of media, including text-based and video, while ensuring that the quality of text and pictures was superb. There is some slight overlap in resources, including both a live field trip option and a virtual field trip option. Both resources

were curated because of their location in Virginia and the quality of academic relevance they provided for students. The primary resources were selected because of the authority of the source and the caliber of the resources they are able to provide. The realia selected were exemplars in both quality and the hands-on experiences that they could provide students to learn more about parts of flowers and root systems.

Annotated Bibliography

Print Resources

Ignotofsky, R. (2021). ***What's inside a flower?: And other questions about science and nature*****. Dragonfly Books.**

Annotation. In *What's Inside a Flower? And Other Science & Nature Questions*, Ignotofsky combines detailed illustrations with engaging scientific explanations suitable for a young audience. This 48-page book is designed to spark curiosity among grade 4 students about plant biology and the natural world. Its content aligns with Science SOL 4.4, which delves into the structure and functions of plants. Ignotofsky's work is particularly effective due to its approachable language and the inclusion of nature-focused questions that promote inquiry-based learning. This makes it a valuable resource for encouraging students to explore beyond the textbook and develop a deeper understanding of plant science.

This resource is particularly suited for grade 4 readers due to its combination of scientific facts and accessible illustrations. It provides an excellent supplement to classroom learning, supporting the Virginia Department of Education's science standards by offering a tangible exploration of plant anatomy and life processes.

Thorogood, C. (2018). ***Perfectly peculiar plants: Take a walk through Earth's weirdest, wildest and most…*** **words & pictures.**

Annotation. *Perfectly Peculiar Plants* was selected as a 2019 Outstanding Science Trade Book for Students: K-12 by the National Science Teachers Association and the Children's Book Council. The author, Dr. Chris Thorogood, is the Head of Science and Public Engagement at Oxford Botanic Garden in England and has authored several botanic field guides. Written to appeal to the inquisitive nature of children, Thorogood has provided a distinctive mix of fascinating facts about a variety of plant species from around the globe. Students will learn about 24 unique plants, including the queen of the night cactus, the dead horse arum, and the Venus flytrap. They will also learn how plants get energy, how they are able to communicate, why they have flowers, and how some move.

The content in this book supports Science SOLs 4.2 and 4.3. Having a source of information written by a person of authority who is knowledgeable in horticulture and part of a prestigious institution makes this book a wonderful source for students to understand unique plants and their characteristics.

Nonprint Resources

Lewis Ginter Botanical Garden. (2023). ***Virtual field trip packages*****.**

https://www.lewisginter.org/learn/childrens-programs-2/virtual-field-trip/

Annotation**.** Consistently rated among the top botanical gardens in the United States, the Lewis Ginter Botanical Garden sits on 50 acres outside of Richmond, Virginia. The gardens were named among the most beautiful by readers of *Conde Nast* magazine and *USA Today* in 2017. Lewis Ginter Botanical Garden features over a dozen themed gardens, a conservatory, a library, and a café ("Lewis Ginter Botanical Garden," 2023).

Free virtual field trip packages have been created to provide students in grades K-8 with a connection to nature that is aligned with the Virginia Science SOLs (Lewis Ginter Botanical

Garden, 2023). Each topic offers an educational video, hands-on activities, and additional resources. Using this free source will ensure that students from all economic backgrounds are able to access relevant information about plants. In addition, students who are unable to participate in an actual field trip would still be able to experience an actual botanical garden.

Gibbons, G. (2013). *From seed to plant*. Live Oak Media eReadalong.

***Annotation*.** Gail Gibbons' *From Seed to Plant* is a testament to her ability to make nonfiction accessible and engaging for young readers. The book caters to students from kindergarten through grade 4, with content that is particularly relevant for readers at a grade 3 reading level. Gibbons uses a combination of detailed illustrations, captions, and informative text to demystify the growth processes of plants. The audio version, narrated by Erin Mallon, has been noted by *AudioFile Magazine* for its clarity and precision, providing an auditory learning option that complements the visual and textual information. This multi-modal approach supports diverse learning styles and can be particularly helpful for students who benefit from hearing content as well as seeing it. The book's focus on the life cycle of plants aligns well with elementary science standards, making it an invaluable resource for teaching Science SOL 4.4 on plant anatomy and growth.

From Seed to Plant serves as an essential tool for elementary science education, offering a clear and concise exploration of botany. It is especially useful for grade 4 educators seeking to reinforce lessons on plant biology with engaging multimedia resources. Gibbons's book, coupled with Mallon's narration, provides an interactive reading experience that encourages students to engage with the content actively.

The Flora of Virginia Project. (2023). *Flora of Virginia educational videos*. Retrieved from https://floraofvirginia.org

***Annotation*.** The Flora of Virginia Project offers an extensive series of educational videos that serve as an invaluable resource for anyone looking to deepen their understanding of Virginia's plant life. The videos cover a range of topics, including basic botany, taxonomy, plant families, and habitats, and are designed to enhance the use of the flora of Virginia. Each video is approximately an hour long, segmented into sections with time stamps for easy navigation, catering to different learning needs. This resource is ideal for educators and students alike, from those taking their first steps in botany to more seasoned plant enthusiasts. The videos provide a solid foundation for identifying and understanding local flora, aligning well with the educational standards for Virginia schools.

These educational videos from the Flora of Virginia Project are particularly pertinent to the grade 4 science curriculum, which includes plant biology and ecology as outlined in Science SOLs 4.3 and 4.8. The comprehensive approach of the video series, along with additional resource materials, offers an in-depth exploration of the state's flora, promoting both academic learning and practical fieldwork skills.

University Presses or Other Small Presses

Simler, I., Norwood, J., & Tordjman, N. (2021). *The book of amazing trees*. Princeton Architectural Press.

***Annotation*.** *The Book of Amazing Trees,* by Isabelle Simler, Julien Norwood, and Nathalie Tordjman, is a Bank Street College of Education Best Children’s Book of the Year. This book is full of fascinating facts about a variety of trees, covering basic tree anatomy, photosynthesis, the role of flowers, and more. The authors include interactive quizzes to test the reader’s knowledge, seek-and-find scenes to engage the reader, and suggestions for hands-on activities.

This book supports Science SOLs 4.2 and 4.3. Quick assessments using the interactive quizzes in the book can help students and teachers see if material and concepts are understood. This can help teachers in the classroom see a need for review for students or can move them on to a new concept.

Richardson, G. (2013). ***10 Plants that shook the world.*** **Annick Press.**

Annotation**.** This nonfiction picture book is full of facts and text features that explain how certain plants have made a big impact on the world we know. Discover how grass called papyrus made a way to communicate through writing. Learn how different plants like cotton, rubber, and corn have all been used in our lives for more than we think. This resource is a great way to make connections between life and what is learned in the classroom. Richardson's *10 Plants that Shook the World* was a finalist for the Next Generation Indie Book Award of 2013.

This book is a great resource to use to show the importance of plants in our society. Through this book, students will understand how certain plants are used, not to just provide us with oxygen or other common qualities, but with significant roles that have changed the way that our world operates. Creating text to world connections can help students dive deeper into the need for plant life. This book supports SOL 4.3 in showing how these organisms "interact" with the world around them.

Montgomery, B. (2021). ***Lessons from plants*****. Harvard University Press.**

Annotation**.** In *Lessons from Plants*, Beronda L. Montgomery presents a thought-provoking exploration of plant behavior and adaptation, revealing the dynamic nature of plant life. This book, published by Harvard University Press, delves into the ways plants actively engage with their environment, demonstrating adaptability and a form of perception unique to the botanical world. It challenges the common perception of plants as passive entities, instead

portraying them as active participants in their ecosystems. The narrative weaves together scientific understanding with philosophical insights, suggesting how humans might learn from plant resilience and adaptability.

Covering topics that align with Science SOL 4.2, Montgomery's work is an excellent resource for educators seeking to inspire a deeper environmental awareness and scientific curiosity among students.

Community Sources (Museums, Historical Societies, Associations)

Virginia State Beekeepers Association. (n.d.) ***Virginia state beekeepers association*****.** **https://www.virginiabeekeepers.org/**

Annotation**.** The mission of the Virginia State Beekeepers Association (VSBA) (n.d.) is to:

i. Provide effective solutions to the common apiculture problems faced by the members of the Association.
ii. Promote the education and adoption of sustainable and productive beekeeping methods throughout the state.
iii. Advance both the scientific and practical aspects of apiculture.
iv. Cultivate positive relationships with individuals, businesses, and organizations that share a mutual interest in apiculture.
v. Organize events and activities that foster positive relations between Virginia beekeepers and the general public.
vi. Encourage the utilization of hive products.

As stated in the Essential Understandings of the Grade 4 Science Standards of Learning Curriculum Framework (2019), "Most plants reproduce with seeds which are formed in the

reproductive process of flowering plants. Pollination is the process by which pollen is transferred from the stamen (male reproductive structure) to the pistil (female reproductive structure). This transfer can occur as a result of wind, water, or animals. Scents and colors of flowers are attractive to certain pollinators" (p. 10). By working with a local club affiliate of the VSBA, any Virginia elementary library would be able to provide interesting demonstrations for students of how bees are a vital component to the plant life cycle. This would also fulfill many components of the mission of the VSBA.

Norfolk Botanical Garden. (n.d.). ***Norfolk botanical garden educational programs*****.** **Retrieved from https://norfolkbotanicalgarden.org/learn/school-programs-tours/school-field-trips**

Annotation**.** Norfolk Botanical Garden offers an enriching educational experience through its SOL-aligned field trips, tailored for students from Pre-K to grade 12. These excursions present a practical approach to learning, where students can engage directly with nature and apply their classroom knowledge to real-world environments. The "Nature in Action" program is specifically recommended for grades 3-4, making it an ideal match for grade 4 learners. It covers plant and animal adaptations, flower anatomy, photosynthesis, and includes an interactive food web game - components that support and enhance the learning objectives of Science SOLs 4.2, 4.3, and 4.8. The guided field trip, priced at $15 per student, with free entry for school staff, requires pre-registration and is scheduled at least three weeks in advance, ensuring an organized and thorough educational experience. The Botanical Garden also offers special pricing and scholarships for Title I students, demonstrating its commitment to accessible educational opportunities.

The field trip to Norfolk Botanical Garden provides a hands-on learning experience that is both educational and engaging, directly correlating with the Virginia Standards of Learning. Through guided activities and exploratory programs, students can deepen their understanding of botanical science, complementing the theoretical knowledge gained in the classroom.

Primary Sources

Virginia Native Plant Society. (2023). *Virginia native plant guides*.

https://vnps.org/virginia-native-plant-guides/

***Annotation*.** The Virginia Native Plant Society has published nine guides about plants native to different regions of Virginia. The full color .pdf versions of each guide are available for download; some print versions are available for purchase. Each guide highlights different aspects of the ecosystem of that region, keystone plants, tips for gardening in the region, landscaping recommendations, information about pollinators and other wildlife, invasive species, descriptions of preferred growth conditions for specific plants, and profiles of hundreds of species of plants with accompanying pictures.

These resources fully support Science SOL 4.8. Utilizing these guides in the classroom can help students increase their understanding of the natural resources that Virginia has to offer.

American Horticultural Society (AHS). (2023). *Youth gardening.*

https://ahsgardening.org/gardening-programs/youth-gardening/

***Annotation*.** This website offers educator resources including different links to several horticulture websites that include lesson plans and different resources pertaining to plants. On the AHS website, there is a list of books that have won the Growing Good Kids Book Award. These books are deemed the best books about gardening, nature, and environment by the AHS. Utilizing this website as a tool and resource to connect student learning and activities with

professional knowledge of plants and horticulture can result in better understanding of different topics. Teachers can utilize this resource to help find credible and knowledgeable resources to support the goals of the SOLs.

United States Department of Agriculture, Natural Resources Conservation Service. (n.d.). *PLANTS database*. Retrieved from https://plants.usda.gov

***Annotation*.** The USDA Natural Resources Conservation Service's PLANTS Database is a rich primary source offering detailed profiles of plant species within the United States and its territories. The database provides a wealth of information, including taxonomic details, distribution maps, plant characteristics, and images. It serves as a fundamental resource for students exploring botany and ecology, supporting a range of educational standards including Science SOLs 4.3 and 4.4, which focus on plant habitats and their roles in ecosystems. The database is continuously updated, reflecting the latest scientific findings and taxonomy revisions. Its user-friendly interface allows for easy access to data, which is invaluable for both in-class educational activities and individual student research.

As a primary source, the PLANTS Database is authoritative and comprehensive, making it an ideal reference for grade 4 students studying plant life. It encourages scientific inquiry by enabling students to look up and study various plant species, fostering a deeper understanding of the diversity and complexity of plant life in their own region and across the country.

Realia

Hearthsong. (2023). *Root viewer*. https://www.hearthsong.com/products/grow-with-me-root-viewer?variant=40075370463305&gad_source=1&gclid=Cj0KCQiA6vaqBh

CbARIsACF9M6kc3Osir0bxoXqFiv-OHo9ZLH_ILsUWZNzWuh_bROGPPqqJ1Bzp7msaAqUIEALw_wcB

***Annotation*.** The root viewer planting kit allows students to plant flowers, vegetables, or other plants in the classroom and observe plant growth day after day. This would be a fun way to get students engaged in the gardening process and see first-hand how plants grow.

This goes along with Science SOL 4.2, but could also be tied into Science SOL 4.8 if the focus was on plants native to Virginia. This resource supports visual learners and kinesthetic learners with hands-on experiences in understanding how plants grow.

Sargent Welch. (2023). Eisco typical flower.

https://www.sargentwelch.com/store/product/14406275/eisco-typical-flower

***Annotation*.** The Eisco Typical Flower model is described as an "excellent example of a typical flower" (Sargent Welch, 2023). Students can use it to study the structure and function of each part of a flower. Model parts are removable and the ovary is bisected so that students can see the inside structures of a typical flower. The model is approximately 17" x 8" x 13". A numbered key card identifying all parts of a flower is included.

By seeing, touching, and interacting with the model in grade 4, students taking the Grade 5 Science SOL assessment would be more likely to remember the parts of a flower and be able to understand the reproductive process.

References

Board of Education Commonwealth of Virginia. (2019). *2018 Virginia science standards of learning curriculum framework.* https://www.doe.virginia.gov/home/showpublisheddocument/23705/638043831490030000

Lewis Minter botanical garden. (2023, November 18). In *Wikipedia.* https://en.wikipedia.org/wiki/Lewis_Ginter_Botanical_Garden

Rowen, L. (2023, September 9). Few Virginia school divisions see bright spots in SOL scores. *Cardinal News*. https://cardinalnews.org/2023/09/09/few-virginia-school-divisions-see-bright-spots-in-sol-scores/

Sargent Welch. (2023). Eisco typical flower. https://www.sargentwelch.com/store/product/14406275/eisco-typical-flower

Virginia Department of Education. (n.d.). *Virginia school quality profile.* https://schoolquality.virginia.gov/schools/point-o-view-elementary

Virginia Department of Education. (2018). *Virginia science standards of learning: Grade 4.* https://www.doe.virginia.gov/home/showpublisheddocument/23727/638043832167070000

Virginia Department of Education. (2021). *Virginia standards of learning assessments: Test blueprint grade 5 science 2018 science standards of learning.* https://www.doe.virginia.gov/home/showpublisheddocument/30010/638046452519800000

Virginia State Beekeepers Association. (n.d.) *Virginia state beekeepers association*. https://www.virginiabeekeepers.org/

Appendix A

Resource	Price	Unit	Total
What's Inside a Flower? - Book	$20	5	$100
Perfectly Peculiar Plants - Book	$10	5	$50
The Amazing Book of Trees - Book	$20	5	$100
10 Plants that Shook the World - Book	$40	5	$200
Lessons from Plants - Book	$25	5	$125
Botanical Gardens - Field Trip	$15 per Ticket $675 for transportation	125 Students 3 Buses	$1,875 $675
Bee Society - Honorarium	$100		$100
Root Viewer - Realia	$45	25	$1,125
Eisco Typical Flower - Realia	$100	25	$2,500
Grand Total			**$6,850**