A STUDY OF BEST PRACTICES AND RECOMMENDATIONS FOR A PRE-K THROUGH FIRST GRADE FIELD TRIP PROGRAM FOR THE ACCOKEEK FOUNDATION

A Project Paper

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by

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ABSTRACT

The purpose of the study was to determine if the Accokeek Foundation could offer a pre-kindergarten through first grade field trip program analogous to that offered by the nearby Schmidt Outdoor Education Center. The impetus for the study was the Foundation's inability to accommodate the quantity of incoming teacher requests. The study investigated best practices at cultural institutions in the Washington DC, Maryland, Virginia (DMV) area, including academic centers, aquaria, arboreta, botanical gardens, environmental education centers, farms, history museums, and nature centers. Best practices were assessed by visiting 14 sites, consulting with an additional 9 sites, and investigating 20 sites online. An interview guide was employed to steer conversations and correspondence. Field trips were generally staff-led by either education or content experts. Successful self-guided programs typically employed the exhibits, interpretive signage, on-site interpreters, and vast online resources. More than one third of sites aligned their field trips to educational standards, but did so in varying degrees. Field trip activities that worked well included a mixture of both fine and gross motor activities, as is developmentally appropriate. Beyond funding, marketing and website administration were also cited as challenges. Logistical considerations were similar among sites. Available online teacher tools varied from sparse to plentiful. While the Accokeek Foundation currently lacks the staff and funding that would be necessary to offer a program analogous to that of the Schmidt Outdoor Education Center, there is an opportunity for the Foundation to develop a self-guided field trip program for Pre-K through 1st grade students that: could serve a different geographic region of the county, could be an alternative field trip option for teachers who are unable to visit Camp Schmidt, would differentiate the Accokeek Foundation from other cultural sites, and could potentially be expanded over time as additional resources become available. The Foundation could implement a self-guided field trip program that is staffed by one employee, and led by teachers and parents of students. By incorporating topics that are familiar to adults, including activities that require little preparation, sourcing materials that are inexpensive, and using pre-existing assets, the Foundation could pilot a program in spring of the current school year.

BIOGRAPHICAL SKETCH

Melissa Eckloff is a Fellow in the Public Garden Leadership program at Cornell Botanic Gardens. After receiving her A.A. (General Studies) in 1999 from Charles County Community College, she worked in dentistry for several years before returning to school. She transferred to Cornell University in 2003, received her B.S. (Plant Science) in 2005, and spent the next several years working as a Research Technician in Cornell's Department of Horticulture. In 2013 after developing her technical skills in Horticulture, she began pursing her M.P.S degree as a Fellow in Cornell Botanic Garden's Public Garden Leadership program. She focused on Education, and gained practical experience by completing two internships (Ithaca Children's Garden and Cleveland Botanical Garden), and by working with the Cornell Prison Education Program.

ACKNOWLEDGMENTS

I would first like to thank my advisors Don Rakow of the School of Integrative Plant Science, and Sonja Skelly of Cornell Botanic Gardens, at Cornell University. They extended me the patience and space I needed to complete this project in my own time.

I would also like to thank the Accokeek Foundation for providing me employment and entrusting me to develop this proposal for early elementary student field trips. In particular, Ashley Thompson provided the opportunity, oversight, and support necessary to complete this project.

I would also like to thank the many experts at the various cultural sites that I visited and consulted with. So many were willing to freely share their time and expertise with me. It is truly a tight-knit and caring community that I'm proud to be a part of.

Finally, I must express my heartfelt gratitude to my parents, husband, and circle of close friends that encouraged me throughout this lengthy process. This accomplishment would not have been possible without their unending support. Thank you.

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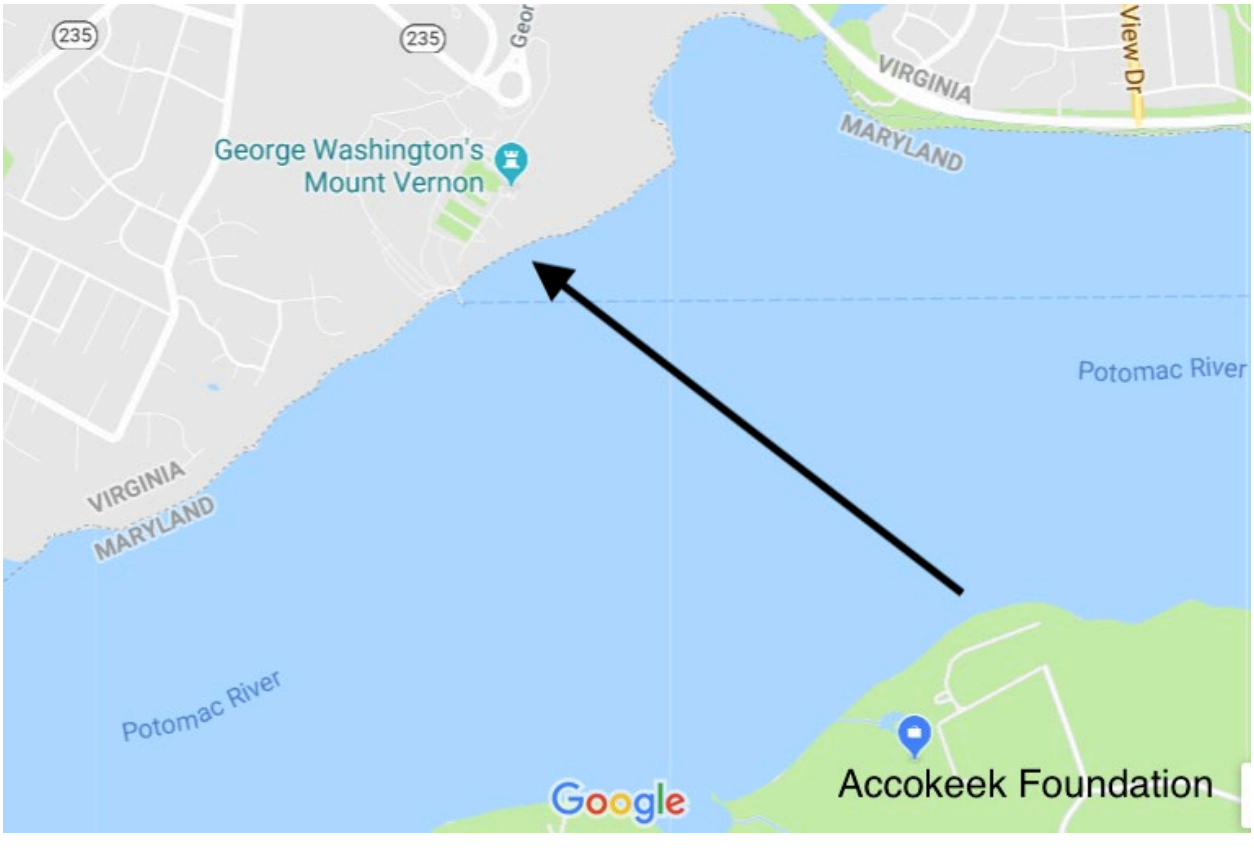
CHAPTER 1

INTRODUCTION

History of the Accokeek Foundation

The Accokeek Foundation is unique in that was initially created to protect the viewshed from George Washington's Mount Vernon. It is situated on the Maryland shore of the Potomac River, directly across from Mount Vernon on the Virginia shore of the Potomac River.



In the 1950's this vista was under threat of being developed. In 1957, Congresswoman Frances Payne Bolton of the Mount Vernon Ladies' Association, purchased and then donated land in order to preserve the vista.

Today, the National Park Service oversees stewardship of 2,000 acres along the Potomac River, known as Piscataway Park. It was the first national park created to preserve a historic vista. The Accokeek Foundation (the Foundation) stewards 200 of these acres, and features: historic interpretation, heritage breed animals, heirloom crops, historic buildings, hiking trails, fishing and boating piers, and education and visitor centers. They host thousands of guests every year. (Employee Handbook 03/20/17)

Their Mission and Vision

The Accokeek Foundation's mission is to "Cultivate passion for the natural and cultural heritage of Piscataway Park and commitment to stewardship and sustainability." Its vision is "People connected to the land and engaged in creating a sustainable world."

Location

Located in Prince George's County, Maryland, the Foundation is approximately 25 miles south of Washington, DC. It is nestled in an idyllic country setting, and can be accessed from several metropolises in less than an hour. There are countless regional attractions nearby in Baltimore-Maryland, Alexandria-Virginia, and Washington-DC.

Purpose

The Foundation has a field trip program, Eco-Explorers: Colonial Time Warp, that is suitable for grades 2-12. Eco-Explorers Senior is geared toward grades 6-12, while Eco-Explorers Junior is geared towards grades 2-5. This award-winning program is successful, but isn't suitable for early elementary learners in grades Pre-K through 1st grade. In the 2017-2018 school year, the Foundation received requests from teachers representing approximately 300 students for this type of programming. I was hired by the Foundation to explore and develop a field trip program for early elementary learners in grades pre-K – 1st grade.

In addition to the Foundation's desire to expand their field trip offerings, The William S. Schmidt Center (Camp Schmidt) approached the Foundation about a possible collaboration to better accommodate students in early grades. Camp Schmidt is an academic center that provides students with a meaningful outdoor experience that enhances as well as reinforces skills learned in the classroom. This is a well-established model in Maryland that began in the 1980s as part of the Chesapeake Bay Agreement, whereby each county has one or more campuses that provide environmental education experiences for public school students in that county. These campuses are frequently located in more rural areas, and are staffed and funded by the county board of education.
(Camp Schmidt website)
(See Appendix 1- The History of Environmental Education in Maryland)

Camp Schmidt is interested in partnering with the Foundation in part because they are unable to accommodate all of the Pre-K through 1st grade students in their district. Their program is supported by a single staff person, and by early fall, their programs are booked up for the remainder of the school year. Additionally, this collaboration could potentially serve a different geographic region of the county, and be an alternate field trip option for teachers.

There is a precedent for collaboration between the Foundation and Camp Schmidt. The two organizations currently partner together on another endeavor, the 7th grade student service-learning (SSL.) For this project, students study wild rice and its ecological potential, grow rice plants in their classrooms, and then plant those rice plants in a local body of water. This is part of an effort to help restore the health of the Chesapeake Bay.
(PGCPS SSL Plan)

CHAPTER 2

PROJECT OVERVIEW

To determine how to develop a field trip program for the Foundation for early elementary learners, I visited numerous cultural institutions, observed programs, had phone consultations, queried volunteers, staff, and directors, corresponded via email, and explored their websites. In total, I visited 14 sites, consulted with 9 sites, and investigated another 20 sites online.

Table 1. Organizations and interaction type

Organization	**Type of interaction**
Chesapeake Bay Environmental Center	Visited
Claude Moore	Visited
Frying Pan Farm	Visited
Historic Sotterley Plantation	Visited
Historic St. Mary's City	Visited
Irvine Nature Center	Visited
Jefferson Patterson Park & Museum	Visited
Jug Bay Wetland Sanctuary	Visited
Maryland Historical Society	Visited
Mount Vernon	Visited
Nanjemoy Creek Environmental Education Center	Visited
National Aquarium	Visited
Oxon Hill Children's Farm	Visited
Schmidt Outdoor Education Center (Camp Schmidt)	Visited
Brookside Gardens	Consulted
Brookside Nature Center	Consulted
Chesapeake Bay Maritime Museum	Consulted
Cleveland Botanical Garden	Consulted
Elms Environmental Education Center	Consulted
Green Spring Gardens	Consulted
Morton Arboretum	Consulted
Robinson Nature Center	Consulted
United States Botanic Garden	Consulted

Table 1. (continued)

Adkins Arboretum	Investigated
Alice Ferguson Foundation at Hard Bargain Farm Environmental Center	Investigated
Benjamin Banneker Historical Park and Museum	Investigated
Calvert Marine Museum	Investigated
Calvert Nature Society	Investigated
Charm City Farms	Investigated
City Blossoms	Investigated
Colonial Williamsburg	Investigated
Cosca Park/ Clearwater Nature Center	Investigated
Frederick County Parks & Rec	Investigated
Greenwell Foundation	Investigated
Historic Surratt House Museum	Investigated
Historic London Town and Gardens	Investigated
Howard County Conservancy	Investigated
Huntley Meadows Park	Investigated
Jug Bay Natural Area/ Patuxent River Park	Investigated
Loudon Heritage Farm Museum	Investigated
Maryland Agricultural Resource Council (MARC)	Investigated
Patuxent Research Refuge	Investigated
Rose Hill Manor Park & Museum	Investigated

Masters Action Project Goal

My goal for these investigations was to determine how the best practices of these sites could inform the development of a Pre-K through 1st grade field trip program for the Foundation.

Implementation

By synthesizing my findings into a list of recommendations for the Foundation, it is my hope that they will have the information necessary to pilot a field trip program for early elementary learners in pre-K-1st grade in the Spring of the 2018-2019 school year. Based on the results of the pilot program, they may be in a position to offer and market a program in the 2019-2020 school year.

Applicability

Beyond the applicability for the Foundation, my findings may also be applied more generally to other cultural institutions such as public gardens, history museums, environmental education centers, zoos and aquaria. This information may be applicable to sites interested in developing or expanding their field trip program, sites that can't afford a consultant to do market research, and sites tasked with doing more programming with less resources. It could also help to inspire sites looking to offer programming for older students with various learning challenges, as this type of programming frequently is less content heavy, relies less on verbal instruction, and incorporates more opportunities for physical movement. This project offers a glimpse into the types of programming that are currently available for Pre-K through 1st grade students in the Washington DC, Maryland, Virginia (DMV) area.

CHAPTER 3

CONSIDERATIONS

Accokeek Foundation guidelines

Certain guidelines for this project were set forth by the Foundation's Director of Education.

- The target audience should be Pre-K through 1st grade. By aiming for a Kindergarten audience, the program should be easy to scale up or down accordingly.
- The focus should be on social studies and environmental science.
- The program should incorporate experiential learning and be hands-on.
- Students should explore and investigate the natural environment.
- The program should incorporate imagination, role playing, pretend, museum theater, game playing, and/or "immersive adventure."
- The program should be able to run concurrently with the existing field trip program, using separate portions of the site so that it will not interfere with that program.
- Ideally, the program would use only 1 staff person as a facilitator and rely heavily on teacher and parent chaperones.
- If possible, find a way to accommodate large groups of students (up to 110).

Personal ambitions

Based on my experiences in both formal and non-formal education, I had certain ambitions for this project as well.

- Both students and adults will have positive outdoor experiences that combat nature deficit disorder & encourage environmental stewardship.
- Activities will incorporate both hands-on and bodies-on learning, toward combatting obesity and being developmentally appropriate. (Bodies-on learning incorporates gross motor movement of the limbs, including running, jumping, twirling, or activities that promote midline crossing.)
- The program should be flexible and multidisciplinary, able to meet teachers' various needs and students' learning styles.
- The program should value experiences over products, toward being environmentally sound.
- The program will inspire students to learn more on their own and encourage self-directed learning, aiming toward becoming lifelong learners.
- The program should optimize the unique resources found at the Foundation, toward differentiating the Foundation from competitors.
- The program incorporates play, toward bringing attention to play as an important component of learning.

SWOT Analysis

After working for the Foundation for three months, I conducted an analysis of the its Strengths, Weaknesses, Opportunities, and Threats (SWOT) to evaluate the organization's ability to develop and establish a Pre-K to 1st grade field trip program. Organizations use a SWOT analysis to reveal key issues prior to engaging in projects. It helps to identify internal strengths and weaknesses and external opportunities and threats. I completed the analysis by integrating knowledge and experience I gained through the on-boarding process, personal observations, and preliminary work experiences. Initially I approached it individually, then sought feedback from coworkers to ensure the review was comprehensive.

Table 2. SWOT analysis of Accokeek Foundation

Strengths	**Weaknesses**
Physical spaces • Forest • Hiking trails • Fishing pier • Natural spaces • Potomac River access • Gardens Animals • Heritage breed animals • Wildlife • Nesting osprey Other • Availability of natural materials, especially along the shore and in the forest • Historical interpretation • Small organization allows flexibility • National Park Service (NPS) funding guaranteed through 2022	Location • Remotely located • Lack of public transportation • Road condition long neglected (asphalt repairs, dense plant growth) Organization issues • Wayfinding is inadequate and confusing • Site, organization, and field trip program branding are confusing *(for example- we are a part of the National Park Service- Piscataway Park, stewarded by the Accokeek Foundation, which is home to National Colonial Farm, with the existing Eco Explorers field trip program)* • Small budget • Education Department staff size is small • Existing field trip program is their priority • National Colonial Farm (the Colonial site) is not available due to other field trips • Bathrooms can be a bottleneck • Site is spread out over a large physical area • Green practices in place but not practiced

Table 2. (continued)

Strengths	**Weaknesses**
This area is intentionally left blank.	Outdoor setting • Many students arrive not prepared to be outside in the elements • Weather –especially the heat and humidity • Insects
Opportunities • Early elementary is a niche market (not fully developed at other sites; often geared toward older students) • Existing relationship with Camp Schmidt/Prince George's County School System • Incorporate play as learning • Promote nutrition (gardens) • Combat obesity (physical activity) • Combat nature deficit disorder (natural setting) • Create youngest environmental stewards • Could package all the local national parks into one package for marketing	**Threats** • Competition with Alice Ferguson Foundation, a well-established neighbor that also offers environmental education field trips • Infrastructure and facilities owned by National Park Service (NPS) therefore Foundation has constraints (water, septic, buildings) Large percentage of funding from National Park Service (NPS,) which is subject to changing political agendas

CHAPTER 4

PREPARATION

Site selection

When selecting which sites to use in my investigation, I had several criteria:

1. physical proximity to the Foundation. In order to be considered, sites needed to be within a 90-minute drive.

2. have a variety of types and sizes of cultural institutions. These included environmental education centers, history museums, farms, aquaria, botanical gardens, nature centers, arboreta, and academic centers.

3. sites had to either have existing field trip programs for Pre-K through 1st grade, or be currently developing them.

4. institutions with notable programs suggested by coworkers, colleagues, and parents. These were notable for having both more successful and less successful field trip programs.

5. employees of the site were willing to share their time and expertise with me.

6. institutions with programs that had some potential influence on or transferability to programming at the Foundation.

Documentation

With so many sites and so much information to collect, it was imperative to maintain meticulous documentation. I found that having an evolving spreadsheet allowed me to keep track of basic information and expand as needed.

One tab was for "Sites Visited." Within this sheet, I kept track of the site name, their mission, their location, mileage and travel time, their website address, program notes, general notes, the contact person, the contact person's position within the organization, the contact person's email address, the contact person's phone number, initial contact notes, my visit date, any follow-up needed, post-visit notes, and the date I sent a Thank You note.

Another tab was for "Sites Consulted." Within this sheet I kept track of the above details for sites I was unable to visit in person.

Within a "Sites Considered" tab, I kept track of the above details for sites that I opted not to visit with, but instead mined their websites.

A last tab, "Other Resources," helped me to keep track of other organizations I discovered that could helpful at a later date, or for others developing programming.

Interview guide

This guide was developed to ensure that I had basic questions to steer conversations. It was also intended to be flexible enough to deviate from as circumstances or opportunities presented themselves. (See Appendix 2 for completed interview guides)

Table 3. Interview guide

Organization
Type
Location
Contact person
Their position
Their email address
What is your organization's mission?
What field trip programming do you offer for Pre-K through 1st grade students?
Do you offer additional types of programming for Pre-K through 1st grade students?
Do you have any self-guided field trip options?
Visit date
Program observed
Program type

Table 3. (continued)

How do you evaluate success in your field trip program?
How are field trips staffed?
What is expected of teachers and parents?
What is your supervision ratio?
What is the maximum group size you accommodate?
Scheduling
Developmental considerations for this age group?
What activities work well/don't work well for this age group?
Are your field trips aligned to learning standards?
Any special safety concerns to be aware of?
What barriers are there to field trips?
Do you require or offer any type of teacher/parent training? What type?
Special notes

CHAPTER 5

PROCESS

Sites Visited

Below is a list of the sites that I visited. Visits took place between June and September of 2018. Because it was "off season" for school field trips, it was necessary for me to observe other types of programs that involved Pre-K through 1st grade audiences. This ended up being an eclectic mix of programming, including: one-off programs, parts of recurring series, and teacher professional development.

Table 4. Sites visited

Site	**Type**	**Visit date**	**Program name**	**Type of program**	**Contact person**
Chesapeake Bay Environmental Center	Environmental education	06/18/2018	Creepy Crawler Gardening Class	One of a recurring series	Karen Bogue
Claude Moore	History museum	o7/12/2018	Farm Skills	One-off program	Clara Everhart
Frying Pan Farm	Farm	07/02/2018	Little Hands on the Farm	One of a recurring series	Patrick McNamara
Historic Sotterley Plantation	History museum	06/26/2018	Butterfly Week	One of a recurring series	Jeanne Pirtle Katherine Humphries
Historic St. Mary's City	History museum	06/06/2018	Little Explorers	One of a recurring series	Sharol Yeatman
Irvine Nature Center	Environmental education	08/22/2018	Summer camp	Week-long program	Tara Lilley
Jefferson Patterson Park & Museum	History museum	07/19/2018	Head Start field trip	One-off program	Julie Hall
Jug Bay Wetland Sanctuary	Environmental education	06/14/2018	Preschool Nature Series	One of a recurring series	2 volunteers
Maryland Historical Society	History museum	08/22/2018	Teacher resource open house	Open house	Alex Lothstein

Table 4. (continued)

Mount Vernon	History museum	06/07/2018	Seed to Table program	School field trip	Libby Jones
Nanjemoy Creek Environmental Education Center	Academic center	09/06/2018	No event name	Conversation and site visit	Tim Emhoff
National Aquarium	Aquarium	08/14/2018	Teacher professional development	Teacher training	Lauren Albright
Oxon Hill Children's Farm	Farm	06/12/2018	Meet the Dairy Cow, Chicken & Egg	Drop-in program	Ranger Steph
Schmidt Outdoor Education Center (Camp Schmidt)	Academic center	06/13/2018; 08/29/2018	No event name; Teacher professional development	Conversation and site visit; Teacher training	Leslie Marcus

Sites Consulted

Below is a list of the sites that I consulted with via phone conversations or email exchanges. Consultations took place between July and October of 2018. As I began my site visits, it became apparent that I needed to seek additional input from sites with particular regard to self-guided field trips.

Table 5. Sites consulted

Site	**Type**	**Consultation date**	**Topic**	**Contact person**
Brookside Gardens	Botanical garden	07/30/2018	Self-guided field trips	Lynn Richard
Brookside Nature Center	Nature center	07/25/2018	Nature play space	Priscilla Taylor
Chesapeake Bay Maritime Museum	History museum	08/01/2018	Self-guided field trips	Jill Ferris
Cleveland Botanical Garden	Botanical garden	10/30/2018	Self-guided field trips	Kathryn Clusman
Elms Environmental Education Center	Academic center	08/10/2018	Self-guided field trips	Margarita Rochow
Green Spring Gardens	Botanical garden	07/07/2018	Field trips	Heidi Young
Morton Arboretum	Arboretum	08/03/2018	Self-guided field trips	Meghan Wiesbrock
Robinson Nature Center	Nature center	09/28/2018	Field trips	Kevin Costin
United States Botanic Garden	Botanical garden	08/07/2018	Self-guided field trips	Lee Coykendall

Sites Considered

Below is a list of the sites that I opted not to visit. I had limited interactions with them, and predominantly mined their websites for information on their field trips.

Table 6. Sites considered

Site	**Type**	**Contact person**
Adkins Arboretum	Arboretum	Leslie Adelman
Alice Ferguson Foundation at Hard Bargain Farm Environmental Center	Environmental education	Emily Leedy
Benjamin Banneker Historical Park and Museum	History museum	Unknown
Calvert Marine Museum	Museum	Melissa McCormick
Calvert Nature Society	Nature center	Tania Gale
Charm City Farms	Farm	Mangy White Bushman
City Blossoms	Farm	Willa Pohlman
Colonial Williamsburg	History museum	Unknown
Cosca Park/ Clearwater Nature Center	Nature center	Stephanie Jacob
Frederick County Parks & Rec	Park	Desire DeGrange
Greenwell Foundation	Park	Julia Zalesak
Historic Surratt House Museum	History museum	Unknown
Historic London Town and Gardens	History museum	Unknown
Howard County Conservancy	Conservancy	Ashley Satterfield
Huntley Meadows Park	Park	Karen Sheffield
Jug Bay Natural Area/ Patuxent River Park	Park	Unknown
Loudon Heritage Farm Museum	Farm museum	Katie Jones Christie Love
Maryland Agricultural Resource Council (MARC)	Agriculture	Tom Whedbee
Patuxent Research Refuge	Nature center	Timothy Parker
Rose Hill Manor Park & Museum	History museum	Kari Saavedra

Types of sites

Table 7. Types of sites by number

Type	Number
Academic center	2
Aquarium	1
Arboretum	1
Botanical garden	4
Environmental education	3
Farm	2
History museum	7
Nature center	2

Location of Sites

Table 8. Location of sites by state

Maryland	16
Virginia	4
DC	1
Other	2

CHAPTER 6

RESULTS

Guided field trips

Of the 23 sites I studied, 91% or all but 2 sites, Claude Moore Colonial Farm and United States Botanical Garden, offered guided field trips. Having guided field trips, led by staff members, was the prevailing trend.

Field trips were staff-led 83% of the time, leaving only 17% led in an alternative way, such as relying on school teachers, chaperones, staff interpreters, or a combination thereof (Camp Schmidt, United States Botanic Garden, Mount Vernon, National Aquarium, Robinson Nature Center.) Staff-led trips employed full-time staff, part-time staff, regular staff, and seasonal staff. They were typically either experts in education- instructors, current teachers, retired teachers, or content experts- horticulturists, naturalists, and park rangers. Of these 19 sites, 3 of them (Chesapeake Bay Environmental Center, Historic St. Mary's City, Green Spring Gardens, and Robinson Nature Center) also made use of volunteers, interns, or chaperones for additional program support.

The staff for guided field trips received extensive training. It typically involved shadowing existing field trip programs, access to lesson plans, practice co-teaching programs, feedback from skilled staff, and annual site training.

Of the remaining 4 sites that did not have staff-led field trips, 3 did not offer guided field trips (Claude Moore Colonial Farm, Mount Vernon, and United States Botanic Garden), and 1 relied solely on teacher and parent chaperones (Camp Schmidt).

Self-guided field trips

Of the 23 sites I studied, 57% or slightly more than half offered a self-guided field trip option. The following 13 sites offered this option- Chesapeake Bay Environmental Center, Frying Pan Farm, Historic St. Mary's City, Mount Vernon, National Aquarium, Oxon Hill Children's Farm, Brookside Gardens, Chesapeake Bay Maritime Museum, Cleveland Botanical Garden, Green Spring Gardens, Morton Arboretum, Robinson Nature Center, and United States Botanic Garden, while the other 10 did not.

Many of these sites, including Chesapeake Bay Environmental Center, Frying Pan Farm, Historic St. Mary's City, Brookside Gardens, Cleveland Botanical Garden, reported that this type of programming was rarely used and not very popular.

Two clear exceptions emerged. Mount Vernon and United States Botanic Garden had successful self-guided programs, in that the programs were well used and popular with teachers. This might be attributable to: numerous exhibits available, extensive interpretive signage, clear way-finding, on-site interpreters available to interact with, and vast online resources.

One site, Elms Environmental Education Center, mentioned that they had previously tried and then discontinued a self-guided program. No reason was cited, but a new approach to self-guided visits is in development. Two other sites, Jug Bay Wetland Sanctuary and Maryland Historic Society, indicated that they were currently developing self-guided programs.

Self-guided programs ranged from having zero resources provided, to having numerous resources available. They typically included: walking trails, backpack-style programs, tours of farms, tours of gardens, discovery stations, children's gardens, exhibits, or visits with interpreters. Often, they incorporated an element of teacher choice, and offered multiple ways to engage with the content. The Morton Arboretum suggested that self-guided tours have the most potential to be successful with early elementary students. This is because their curricula have the most flexibility. A self-guided program could be exploration-based, incorporate open-ended questions, and include an appropriately themed story book.

Several challenges were cited regarding self-guided field trips. They were all directly related to teachers in one way or another. A belief that teachers were generally not comfortable being outside in nature was mentioned frequently. Though this could be attributed to teachers' individual upbringing or preferences, there was a more general concern that teachers receive little training in the sciences and lack comfort teaching about nature in natural settings without assistance for site staff.

Staff at some sites believed a change in the purpose or perception of field trips had occurred. Historically, field trips were used as a way to extend classroom learning. More recently, field trips have been used as incentives for students' good behavior. Students and teachers alike may have anticipated a "day off" from responsibilities and learning.

Topics

By reviewing field trip descriptions, I recorded over 200 individual topics for field trips. There emerged many commonalities among field trip topics. The broad categories included: animals, changes over time, environmental topics, food, habitats, history, people, and plants.

The most frequently incorporated topics focused on animals and plants. The animals category included specific topics such as: adaptations, animal artifacts, aquatic animals, domesticated animals, habitats, insects and other invertebrates, life cycles, living versus non-living things, mimicry, farm animals, and wild animals. Specific plant topics included: germination, flowers, native plants, plant parts, pollination, photosynthesis, seed dispersal, and trees.

Other topics that were less frequently incorporated included: changes over time, environmental topics, food, habitats, history, and people. Changes over time included topics such as: natural cycles, effects of our actions, life cycles of plants and animals, seasons, and soil creation. Environmental topics included: endangered species, habitat loss, invasive species, reusable materials, and stewardship. Food included topics such as: apples, cider, corn, cornmeal and flour, eggs, gardening, and maple syrup. Topics related to habitats included a variety of ecosystems: forests, ponds, prairies, streams, wetlands, and woodlands, as well as discreet locations such as the Chesapeake Bay. Historical topics included: colonization, daily lives of people, education, family roles, immigration, letter writing, and tools. Topics related to people

included: art, artifacts, body parts, clothing, games, immigration, jobs, Native Americans, the senses, and wealth and power.

Nature play areas

Two sites incorporated nature play into their field trip programs. The Morton Arboretum's "Leave No Child Inside" option focused on free-exploration of nature. Irving Nature Center's Outdoor Classroom focused on sensory experiences. It provided opportunities for water play, sand play, and digging, and featured a mud kitchen complete with real kitchen tools.

Several other sites had areas for this type of learning that were extremely popular with guests, but they hadn't formally incorporated these spaces into their field trip programs yet. Portions of Cleveland Botanical Garden's field trip programs took place in their Hershey Children's Garden but their spaces for free play, and imagination, such as their water & sand play space and mud kitchen were not incorporated during field trips. Brookside Nature Center, Jug Bay Wetland Sanctuary, and Claude Moore Colonial Farm all featured nature play areas. Brookside featured tree cookies, a child-sized bird's nest, sand pit, and a rock pile. Jug Bay featured a submerged boat for pretend play, logs for hopping, and beams for balancing. Claude Moore featured a tetherball, balance beams, and stumps for hopping.

Two sites acknowledged children's needs to play, but addressed them in traditional ways. Frying Pan Farm had a traditional playground with fixed play equipment. While Oxon Hill Farm did not have a playground, they did offer that they had a large open field where children could run and play.

The remaining sites did not address or incorporate nature play.

Standards

Learning standards change frequently and vary from state to state. The Common Core is a national endeavor, intended to ensure commonality and a basic level of competency in English, Language Arts and Math, in grades K-12 throughout the nation. The Next Generation Science Standards have the same goal, but are focused on Science. Currently, there are no standards in place for Social Studies. States may then interpret these guidelines and develop their own standards.

Of the sites I studied, 39% or less than half, aligned their early elementary field trip programs to educational standards. Of the 9 that did (Frying Pan Farm, Jug Bay Wetlands Sanctuary, Nanjemoy Creek Environmental Education Center, National Aquarium, Camp Schmidt, Green Spring Gardens, Morton Arboretum, and Robinson Nature Center) field trips were aligned to varying degrees. The remaining 14 did not align their field trips to standards.

Most sites in Maryland (Jug Bay Wetlands Sanctuary, National Aquarium, Camp Schmidt, and Robinson Nature Center) were minimally aligned to the Common Core or Next Generation Science Standards. Two sites (Historic Sotterley Plantations and Nanjemoy Creek Environmental Education Center) indicated that their field trips were aligned to standards, but I was unable to locate them online.

The two sites in Virginia (Green Spring Gardens and Frying Pan Farm) aligned their field trips to Virginia Standards of Learning (SOL). Likewise, Morton Arboretum aligned to their state standards in Illinois.

It is worth noting that Robinson Nature Center took alignment even further. Not only were field trips aligned to standards, they even suggested which quarter of the school year teachers should visit. This was to facilitate the exact alignment of the field trip's content with the classroom's content. To do this they employed two practicing classroom teachers on staff. These teachers worked in a part time capacity, with one teacher focused on elementary grades and the other focused on the remaining grades.

Developmental considerations

Several developmental considerations differentiated early elementary students from older students. Physiological needs, such as eating and toileting, needed to be addressed frequently. Students' attention span was very short, and they needed reminders and help redirecting their attention. The use of preview and review improved the likelihood of keeping students focused. Warnings helped ease transitions from one activity to another. Activities that engaged multiple senses, by incorporating sight, touch, sound, smell, and taste, improved engagement. Lastly, having realistic expectations about how long their bodies could remain still, improved everyone's experience. They have boundless energy and need to move their bodies.

Activities that worked well

Activities that worked well for sites included a mixture of fine and gross motor activities. Students could do or access some of these activities for themselves, while other activities required adult assistance.

Gross motor activities included things such as role-playing, scavenger hunts, and movement activities such as games. Fine motor activities included things such as using tools or props, and participating in sensory activities. Activities that students could do or access themselves included pretending, participating in hands-on activities, or engaging in nature play. Teachers or parents helped by doing things like reading stories or asking open-ended questions to provoke thinking.

Most sites did not provide photo opportunities for teachers and parents. Parents of young children were enthusiastic about capturing photos at field trip sites. When opportunities weren't provided, they improvised by creating times and places to take photographs. Their solutions were often ill-timed and a distraction for others that were focused on the program. Sites that provided structured opportunities had less of this challenge.

Evaluation

Of the sites I studied, 39% or less than half, conducted evaluation of their early elementary field trip programming. Those who did evaluations primarily used Survey Monkey (67%), while the remainder relied on paper surveys (33%). Their return rate varied from 20% (Green Spring Gardens) to 85% (Robinson Nature Center). Some sites employed incentives for completion. Jug Bay Wetlands Sanctuary had a semiannual raffle to win an annual pass.

Challenges

The most commonly cited overarching challenges regarding field trips included marketing and website administration. Marketing issues involved developing materials for field trips, making alterations to existing materials, and the timeliness of updating materials to reflect changing academic standards. Website administration involved the ease with which schools could access field trip information, register and pay for field trips, and locate supplemental resources. Both of these issues seemed to be challenges for all sizes of organizations, suggesting that this was really an issue of priorities. Living things such as staff, plants, and animals required attention, whereas intangibles like marketing and web maintenance could be delayed indefinitely.

Smaller sites often lacked dedicated marketing and information technology teams. Lacking the time and expertise, staff were left balancing their regular responsibilities in addition to managing marketing and web site development.

Larger organizations may have had dedicated marketing and information technology teams, but they were responsible for more complex organizations. Therefore, they had to balance multiple departments' priorities. In some situations, non-marketing and non-information technology staff were left to fend for themselves, essentially being in the same situation that smaller sites found themselves. (National Aquarium, Brookside Gardens)

Sometimes a site was part of a much larger collaboration of sites. In these situations, a smaller site might not have independent control of their own website. They were administered by the county or state, and they had relatively little influence over their marketing or web presence. (Oxon Hill Farm, Robinson Nature Center, Brookside Gardens)

Unlike the other sites I studied, Morton Arboretum attributed its success, in part, to a robust marketing plan. It is multi-faceted and always adapting. As Facebook changed its algorithms, they decided to discontinue that effort. They had much success targeting school administrators, as they were the "gatekeepers" to field trips. Additionally, they sent out e-brochures, attended school outreach events, mined lists from their regional office of education, employed teacher testimonials, and hosted "Teacher Tuesday" orientations during the summer.

Less frequently cited challenges included: not having enough chaperones (Camp Schmidt), keeping up with changing educational standards (National Aquarium), the cost of bus transportation (United States Botanic Garden), securing bus transportation (Robinson Nature Center), and teachers having other field trip options available to them (United States Botanic Garden.)

Funding

Funding is a very complex issue and was a challenge for all sites studied. Opportunities differed depending on whether a program was being developed or delivered. If a program was being delivered, opportunities varied according to whether the funds were used to pay for site staff time, materials, field trip fees, bussing, or to hire substitute teachers.

Typically, sites used a mix of funding streams. It was common for sites to combine funds from their operating budget with funds received from grants. Schools often combined school field trip funds with PTA/PTO funds, and collected fees from students.

Sites and schools applied for funding from federal, state, and/or county agencies. The federal Elementary and Secondary Education Act (ESEA) has several provisions that can be applied to field trips. Title I addresses schools that serve low-income students, Title II addresses improving teacher quality, and Title IV addresses the success of each student. Additional federal opportunities included funding from the National Park Service, or National Park Trust programs such as the Buddy Bison Program and Every Kid in a Park (EKIP).

In order to make programs financially accessible to more students, sites strived to keep field trip fees low, typically ranging between $0 and $8. Student accessibility was prioritized over making a profit on field trip programs. Often, their goal was to break even financially.

Even with funding assistance, occasionally the cost of transportation was still a deal-breaker for schools. With a single bus rental costing between $250 to $450 dollars, it can be an enormous cost for schools with dozens of classes. Many grants do not cover the cost of transportation. Chesapeake Bay Maritime Museum employs a novel approach by offering a donor-funded Bus Scholarship program to help offset this expense.

Logistics

Timing-

Field trips consisted of as few as 1 single activity or as many as 5 activity rotations, with the average being 3 activity rotations. The rotations lasted from 15-60 minutes. Total field trip duration lasted between 1 and 4 hours, with the average being 2-3 hours. In the case of shorter field trips, sometimes both a morning and afternoon session were offered.

Some field trips were offered every day of the week, while others were offered only on select days of the week. This was an effort to control crowds and balance staff work schedules. Additionally, some programs were only offered seasonally, such as those that including wading in water, collecting insects, or making maple syrup.

Group size-

Group size, or the maximum number of students a site could accommodate on a given day, varied drastically. The lower end of the spectrum was 30 students, and the upper end was 200 students. Factors that affected capacity included the physical size of the site and the number of staff required. The mode group size, or the number that occurred most frequently was 50-60 students.

Supervision ratio-

Supervision ratio, or the minimum number of adults required per number of students, also varied. The highest ratio was 1:3, the lowest ratio 1:10, and the average ratio 1:8. Some sites indicated

that parents of younger children were more apt to volunteer for field trips thereby yielding a higher ratio, while other sites disagreed.

Expectations of teachers & parent chaperones-

Expectations of teachers and parents were generally minimal. They were routinely expected to manage student behavior and to be active participants in the audience.

It was rare for teachers and parents to have a more significant role, but it did occur. At Camp Schmidt, teachers and parents lead all 5 of the activity rotations for the entirety of the visit. At Robinson Nature Center, teachers and parents lead 1 activity, an exploration of the center's indoor and outdoor exhibits, for 30 minutes.

Training for teachers and parents varied. When the minimum was expected, they typically received no training. Nor did they receive training at Robinson Nature Center, where they oversaw students for only 30 minutes. Sites such as the National Aquarium and United States Botanic Garden offered an optional 1-hour training to help orient teachers to their sites and resources. At Camp Schmidt, teachers were required to attend a 3-hour training session to prepare them to lead the entire day.

Accessibility and accommodations-

Concern for accessibility was not widespread. In general, if there was any mention of it at all, there may have been a single statement on the reservation form. It tended to be a general indication that they would work to accommodate those with special needs if given adequate notice.

Frying Pan Farm included physical accessibility in their FAQs, specifically focusing on wheel chair accessibility. Historic St. Mary's City took a broader approach indicating that they, "[seek] to provide programs for individuals of all abilities."

One site that took a more comprehensive approach was Robinson Nature Center. They offered a Sensory-Friendly Nature Study field trip option that incorporated hands-on activities and movement. This was intended for groups where the majority of students required special accommodations, as opposed to integrated classrooms.

Safety-

Safety considerations varied widely, depending on the potential hazards at each unique site. In general, topics considered included: personal health, the physical site, behavioral expectations, weather, and natural elements. Clear expectations and guidelines for safety were shared in various ways. Beginning with field trip planning materials for teachers, letters to parents and chaperones, and orientation talks with students, safety was always a consideration.

Personal health

Personal health included both preventive and therapeutic measures. Reminding students that there wasn't a nurse on site (like they have at school), and reminding them to drink enough

water, empowered them to be active participants in their safety. In the event that a minor incident occurred, staff were certified in First aid, CPR, and epinephrine auto-injector usage (Camp Schmidt).

Physical site

Physical site considerations included the distance early elementary students were expected to walk, and routine safety checks to minimize hazards. At Irvine Nature Center's outdoor learning classroom, additional steps were employed due to its unique nature. They adopted Certified Playground Safety Inspector (CPSI) policies, many American Society for Test and Materials (ASTM) standards, and Nature Explorer Classroom standards.

Behavioral expectations

Addressing behavioral expectations, in the form of clear and consistent rules and addressing anticipated guest fears, before they became an issue, prevented many unwanted behaviors. Students who were actively engaged in reviewing the rules, instead of passively being told them, were eager to obey (Chesapeake Bay Environmental Center). By addressing a fear of bees before entering the garden, students and adults were able to respond with empathy and understanding instead of fear (Historic Sotterley Plantations, Camp Schmidt).

Parent volunteers at Camp Schmidt had to meet additional behavioral expectations as well. Because Camp Schmidt was part of the county school district, potential parent volunteers had to submit to background checks and fingerprinting before being approved to volunteer. This precaution may have deterred some parents, including those with criminal backgrounds, those with immigration concerns, those unable to take additional time away from work, or those unable to afford the fees.

Weather

Field trips took place rain or shine, largely due to difficulties with rescheduling. Teachers, parents, and students were expected to come prepared for the weather in appropriate clothing, though this could be a significant challenge. Field trips were only cancelled in the case of extreme weather, or when the local school district closed. In the case of heavy rain, alternate locations such as porches or interior locations were used.

Natural elements

The effects of natural elements were prevented or mitigated. Preventive measures such as using bug spray to repel insects and sunscreen to prevent sunburn were encouraged (Chesapeake Bay Environmental Center, Historic St. Mary's City, and Camp Schmidt). Teaching about poison ivy and how to avoid it (Camp Schmidt), and conducting post-visit tick checks (Chesapeake Bay Environmental Center) helped to reduce potential post-visit complications.

Teacher Tools

The variety of online tools by sites to assist teachers in planning and executing a field trip varied from sparse to plentiful. Those sites with the most comprehensive offerings included: planning tools for teachers, planning tools for other adults, resources to prepare for their visit, resources for the day of their visit, resources for after their visit, and resources in lieu of a visit if they couldn't make an in-person visit.

Planning tools for teachers

Planning tools for teachers included items like: field trip descriptions with clearly stated learning goals that were aligned to learning standards, field trip justification forms complete with suggested verbiage, a sample schedule, and a checklist-style planner. The planners suggested a timeline for completing tasks leading up to the field trip in chronological order.

Planning tools for other adults

Planning tools for other adults included items like: a letter to parents that explained where students were going and what they would be doing, a chaperone letter that explained their role during the field trip, and driving directions for bus drivers and parents traveling separately. Some sites provided Spanish language versions of these as well.

Preparing for your visit

In order to prepare for their visit, sites provided pre-visit educational materials, building or site overviews, maps, virtual or video introductory tours, vocabulary or key word lists, fact sheets, and content videos. Teachers could select which materials to incorporate in their teaching.

Day of your visit

Tools for the day of their visit included: a class roster to assist in keeping count of students, a group-making worksheet to facilitate easy division of students into groups for activity rotations, copies of the day's activities, and cell phone apps.

After your visit

After their visit, post-visit educational materials were available to review what students learned and/or to extend their learning, links to additional resources, and hints for future visits.

In lieu of a visit

On some occasions, when an in-person field trip was not feasible, sites provided virtual field trip videos or online access to their exhibits.

CHAPTER 7

RECOMMENDATIONS

My investigation of the best practices at these sites informed the development of a Pre-K though 1st grade field trip program for the Foundation. While it is feasible to develop an early elementary field trip program for Accokeek Foundation, it is not feasible to fill the niche that the Camp Schmidt had hoped for, by offering a program at the Foundation analogous to Camp Schmidt's program. The Camp Schmidt model is not sustainable for them, as indicated by their reaching out to Accokeek Foundation. It relies on a single staff person, funding from the county school district, and is not able to grow in order to accommodate need. There is an opportunity for the Foundation to develop a self-guided field trip program for Pre-K through 1st grade students that: could serve a different geographic region of the county, could be an alternative field trip option for teachers who are unable to visit Camp Schmidt, would differentiate the Accokeek Foundation from other cultural sites, and could potentially be expanded over time as additional resources become available.

Best practices

Field trip format

Guided field trip programs were significantly more prevalent. They are the traditional style of field trip and the most successful type, as indicated by prevalence, usage, and experienced site staff opinions. Sites with successful self-guided field trip programs typically invested significant resources in developing such programs. They required developing teacher and parent supports such as extensive training, online lesson plans, and orientation videos.

Some "modified" self-guided field trip options also exist. Zoos, aquaria, and history museums are places that employ significant signage, wayfinding, and/or interpreters that help facilitate self-guided field trips. Backpack programs are a self-serve model that is often less successful for schools, but tend to be more frequently used by families or affinity groups. Travelling trunk programs are also successful with school groups. These have the added benefit of being delivered directly to the teacher and used in the classroom.

Per the Foundation's guidelines set forth at the inception of this project, I suggest a self-guided field trip program that is staffed by one employee. This employee would be responsible for greeting and orienting guests upon arrival, set up, coordination and cleanup of activity rotations, providing general support and assistance to teachers and parents via 2-way radio communications during the field trip, collecting formative evaluations, handling emergencies, and dismissing the field trip. This model could be long-standing, or a step toward guided field trips when resources allow further development.

Topics

There are certain topics that are more familiar to adults, and thereby potentially less intimidating for teachers and adults to lead as self-guided field trips. The Foundation has existing resources

that could be combined with these topics to develop a self-guided field trip program. Topics that could more easily lend themselves to this self-guided format include: art, backyard/schoolyard animals, changing seasons, farm animals, life cycles, the senses, unstructured time spend outdoors in nature, and wildlife.

Topics that would better lend themselves to a guided field trip include: aquatic animals (fish, snails, clams), artifacts, changes (hibernation/migration), bio-mimicry, effects our actions on the environment, environmental topics (invasive species, stewardship), ecosystems, food (wild foraging and gardening), history, insects and invertebrates, habitats, Native Americans (Piscataway), people past & present (education, roles), plants in our everyday lives, trees, tools, and the watershed. These topics require a level of content knowledge that can't be expected of teachers and parents. They would need to be delivered either by a Foundation staff person, or a teacher or parent who had received specific training.

Activities

For this initial foray into self-guided field trips, I recommend activity rotations that require little day-of preparation and use non-perishable items. The focus should be role-playing, which is both age appropriate and potentially less intimidating for teachers and parents. Supplies should be inexpensive, and be augmented by natural materials available on site. Teachers may choose from the following activity rotations- Veterinarian, Scientist, or Explorer, plus one mandatory rotation at the *Nature Exploration Center rotation.

*I received preliminary approval from the Director of Operations at the Foundation to locate this rotation in an unused area to the west of the Fishing Pier. She also indicated that she has undergone training regarding building such nature spaces. Guidelines, specifications, and safety considerations are available from her.

These activities can easily be led by teachers and parents while one staff person facilitates the overall experience. Ideally each teacher, parent and staff person would have a 2-way radio to allow for basic communication. Natural materials and scripts would be employed to elevate student engagement.

Activity rotations

Table 9. Activity rotations, accessories, and locations

Activity rotation	**Accessories**	**Location**
Veterinarian	Stethoscope, specimen cups, disposable face masks, headlamp, turkey call Animal artifacts= turkey feather, an artificial egg, cow horn, leather swatch, empty milk carton, wool item, plastic bacon toy, boar hair brush, rabbit pelt	Loop of Cedar Lane & Staff access road
Scientist	Waterproof/child friendly camera and memory card, safari vest with pockets, all-weather notebooks, magnifying collection jars Natural materials= hard shell clam shells, soft clam shells, trapdoor snail shell, walnut shell, pawpaw seeds, and acorns.	Pumpkin Ash Trail
Explorer	Spyglass, compass, binoculars, pirate eye patches, treasure chest Tree artifacts= laminated leaves, maple samaras, acorns, a tulip poplar leaf with a cat face drawn on it, and pine needles.	River View Trail
Nature Exploration Center	"Caution kids at play" sign, Loose parts= sticks, rocks, shells, mulch, tree cookies for stacking, logs for hopping, stick and grapevine loom for weaving, etc.	Unused area to the west of the Fishing Pier

While some of these supplies would need to be purchased, it would be preferable to secure some via donation and general site collection. Supplies could be provided in a Radio Flyer-style wagon that teachers or adults would take with them on each activity rotation. If there was a cubby system and each item had it s own cubby hole with a picture taped inside, students could be responsible for replacing items at the end of their rotation, thereby completing an inventory each time it was used.

The Director of Education requested funds for this field trip program in the proposed 2019 fiscal year budget. According to her, there may be approximately $400 available for this project. If that is the case, perhaps one activity rotation could be implemented this fiscal year, with the intent of budgeting for the others in the next fiscal year.

Estimated costs

Table 10. Estimated costs

Supplies	Unit cost	Quantity	Cost
Veterinarian			
stethoscope	$6.69	3	$20.07
specimen cups	$9.95	1	$9.95
disposable face masks	$10.00	1	$10.00
headlamp	$7.99	3	$23.97
lab coat	#11.95	3	$35.85
turkey call	$13.95	1	$13.95
artificial egg	$11.99	1	$11.99
plastic bacon toy	$12.50	1	$12.50
boar hair brush	$10.98	1	$10.98
little red wagon	$158.97	1	$158.97
cubby organizer	$27.50	1	$27.50
			$299.88
Scientist			
waterproof/child friendly camera	$42.99	3	$128.97
memory card	$10.09	3	$30.27
safari vest with pockets	$19.99	3	$59.97
all-weather notebooks	$9.99	3	$29.97
magnifying collection jars	$6.99	10	$69.90
little red wagon	$158.97	1	$158.97
cubby organizer	$27.50	1	$27.50
			$505.55
Explorer			
spyglass	$17.99	3	$53.97
compass	$3.29	3	$9.87
binoculars	$23.99	3	$71.97
pirate eye patches	$5.65	1	$5.65
treasure chest	$41.51	1	$41.51
little red wagon	$158.97	1	$158.97
cubby organizer	$27.50	1	$27.50
			$369.44
Nature Exploration Center			
“Caution kids at play” sign	$22.99	1	$22.99
2-way radio (set of 6)	$64.99	1	$64.99
		Total	**$1,298.70**

Space availability

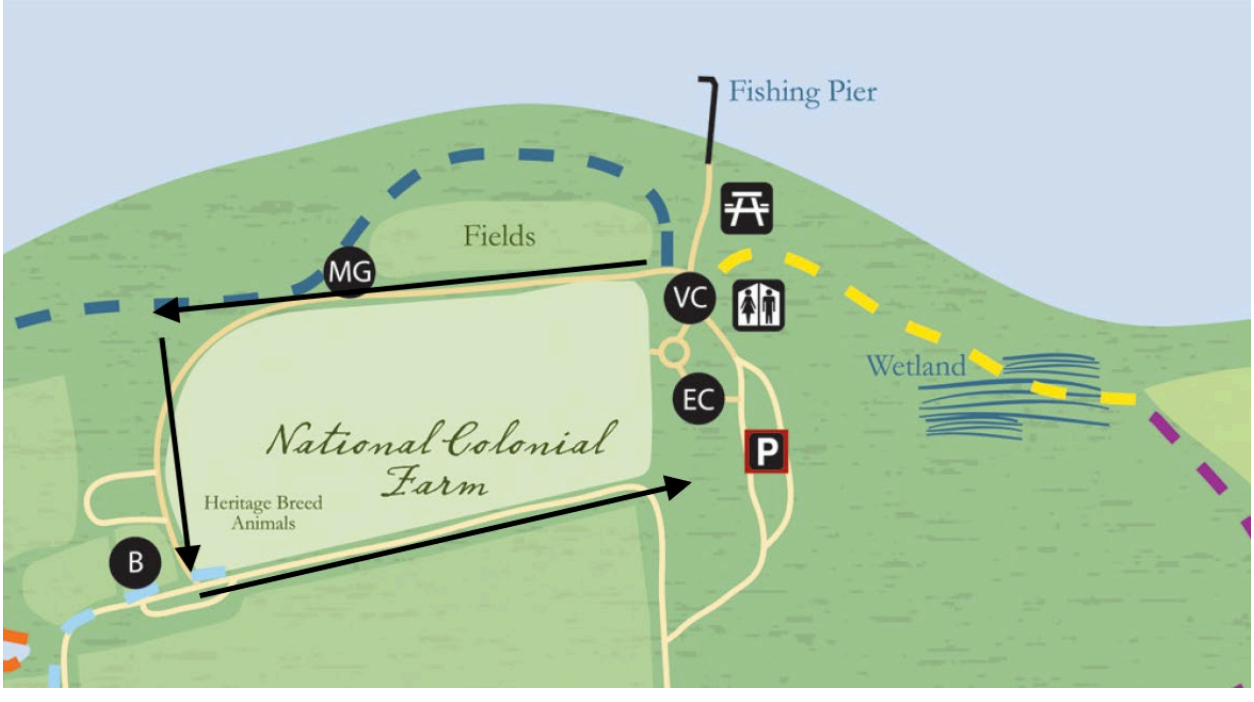
The activity rotations would use different areas of the site, so as not to interfere with the existing field trip program. Colonial Time Warp uses the National Colonial Farm (NCF) area exclusively. The Veterinarian activity rotation would use the perimeter of NCF, by using Cedar Lane, passing the barn yard, and then returning via the staff access road. The Scientist activity rotation would make use of the Pumpkin Ash Trail for both ingress and egress. The Explorer activity rotation would make use of the River View Trail, and then return via Cedar Lane. A convenient spot for meeting to exchange groups could be the maple tree arc, in between the Visitor Center and Education Building.

Activity rotation #1: Veterinarian

During this field trip students will:

1. visit six types of heritage breed farm animals.
2. use veterinarian equipment in imaginative play.
3. investigate animal-based props to explore the relationship between animals and the products we obtain from them.
4. be exposed to naming conventions for male/female and youth/adult animals.

Location: Loop of Cedar Lane & Staff access road



Description: Come visit our heritage breed animals and pretend you're a veterinarian on our farm! You're likely to see domesticated farm animals such as: Jersey Buff turkeys, Java and Icelandic chickens, Devon Milking cows, Hog Island sheep, Ossabaw hogs, and Silver rabbits. Play with tools and let your imagination run wild. Use a real stethoscope, specimen cups, disposable face masks, headlamp, and a turkey call.

Animal artifacts: turkey feather, turkey call, an artificial egg, cow horn, leather swatch, empty milk carton, wool item, plastic bacon toy, boar hair brush, rabbit pelt.

I suggest creating a laminated card for each type of animal. One side can have a picture of the animal, and the other side can have animal facts. Keep the cards on a loose-leaf, metal ring.

(Card 1)
Intro=
Heritage breed animals are animals that our ancestors might have grown.
Most animals grown now have been carefully selected to be raised on large-scale industrial farms.
Heritage breeds are usually adapted to the local environment on much smaller farms.
It is important to raise these older breeds to preserve their genetic diversity.

(Card 2)
Jersey Buff turkeys=
Baby turkeys are called poults.
Boys are called toms girls are called hens.
Grown for meat and eggs.
Look for the stiff black beard on boys' chests.

(Card 3)
Java and Icelandic chickens=
Baby chickens are called chicks.
Boys are called roosters and girls are called hens.
They are grown for meat and eggs.
Look for the wattle, the wiggly part along their neck.
Look for the comb or crest, the sticky-up part on top of their head.

(Card 4)
Devon Milking cows=
Baby cows are called calves.
Boys are called bulls or steers and girls are called cows or heifers.
They are grown for farm work, milk, and beef.
Look at their pointy horns. Both boys and girls have them, which is unusual.

(Card 5)
Hog Island sheep=
Baby sheep are called lambs.
Boys are called rams and girls are called ewes.
They are grown for their wool.
Most of these sheep are white. Only 1 in 5 is black.

(Card 6)
Ossabaw hogs=
Baby pigs are called piglets.
Boys are called boars and girls are called sows.
They are grown for pork.
Look at their spots and coarse, black bristles that resemble fur.

(Card 7)
Silver rabbits=
Baby rabbits are called kittens. (Just like baby cats!)
Boys are called bucks and girls are called does.
They are grown for their fur and meat.
Look at their short, soft, white-tipped fur.

(Card 8)
Review=
Why are we growing these animals?
Which animal had a beard?
What is the name for a baby chicken?

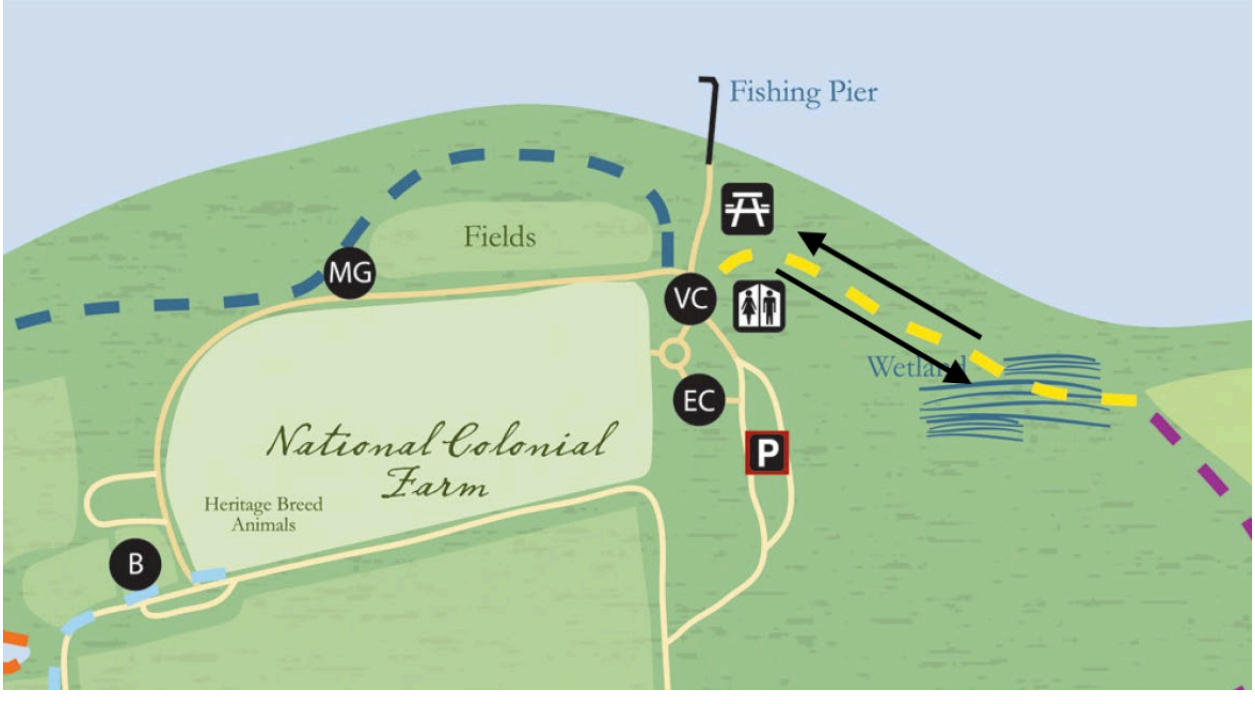
Which color of sheep was most common?
What are pigs grown for?

Activity rotation #2: Scientist

During this field trip students will:

1. explore the shoreline adjacent to the Potomac River.
2. use scientific equipment in imaginative play.
3. search for wild animals and their signs.
4. make discoveries and explore them with their senses.

Location: Pumpkin Ash Trail



Description: Come explore our wilderness and pretend you're a scientist! You'll tromp through woodlands, traipse over the marsh on our boardwalk, and tip toe along the shoreline of the Potomac River. Make discoveries along the way by investigating up close. You're likely to see wild animals such as: box turtles, osprey, dragonflies, and herons. Play with tools and let your imagination run wild. Wear a safari vest while taking pictures with a real digital camera, recording discoveries in a scientist's journal, and examine your findings with special magnifying collection jars.

Natural materials to include: hard shell clam shells, soft clam shells, trapdoor snail shell, walnut shell, pawpaw seeds, and acorns.

I suggest creating a laminated card for each item. One side can have a picture of the item, and the other side can have facts. Keep the cards on a loose-leaf, metal ring.

(Card 1)
Intro=
The shoreline is the area where a body of water meets the land.
You can find all sorts of animal and plant treasures if you walk slowly and look closely.
It is important to keep the shoreline clean because all kinds of things live here.

(Card 2)
Hard shell clam=
These are named for their strong, hard shells.
Some birds will drop them on hard surfaces to break them open.
Try to break a shell with your hands.

(Card 3)
Soft shell clam=
These are named for their weak, brittle shells.
They help to clean the water by filtering it.
Gently touch the smooth, colorful, inside of their shell.

(Card 4)
Trap door snail=
These are named for their "door" that closes them safe inside their shell.
If you find one without their "door," they no longer live in that shell.
Put your finger inside the opening and pretend you have shelly fingers.

(Card 5)
Walnut=
Squirrels and raccoons have strong teeth that can break open walnut shells.
Other foods that grown on trees include: apples, avocados, cherries, oranges.
Think about your favorite thing that trees give us.

(Card 6)
Pawpaw seed=
These seeds were grown inside a pawpaw fruit.
Pawpaws are a native to Maryland, just like blueberries and cranberries.
See how many different colors of seeds you can find.

(Card 7)
Acorn=
These are seeds that grow into huge oak trees.
Most acorns get eaten by animals (birds, deer, and squirrels) and don't grow into trees.
See if you find any acorns that still have their tops attached.

(Card 8)
Review=
Why do we need to keep the shoreline clean?
Which type of clam has a weak shell?
What kind of food grows on trees?
What is one fruit that grows in Maryland?
What kind of seed grows into oak trees?

Activity rotation #3: Explorer

During this field trip students will:

1. notice the proximity of Mount Vernon and learn who lived there.
2. explore the diversity of tree shapes.
3. use exploration-themed props in imaginative play.
4. investigate tree flowers, fruit, and/or seeds.

Location: River View Trail

Description: Come walk along the Potomac River! Admire the view of Mount Vernon from across the river and see what natural treasures you can find. Hunt for trees such as maple, oak, mulberry, tulip poplar, and pine. Wear a pirate patch, try using a real spyglass, compass, or binoculars, while keeping your treasure chest safe from marauding pirates.

Tree artifacts to include= maple leaves- both red and silver, oak leaves- both red and white, a mulberry leaf, a sweet gum leaf and gum ball, a tulip poplar leaf with a cat face drawn on it, and pine needles.

I suggest creating a laminated card for each item. One side can have a picture of the item, and the other side can have facts. Keep the cards on a loose-leaf, metal ring.

(Card 1)
Intro=
Accokeek Foundation was originally created to maintain the beautiful view from Mount Vernon.
George Washington, our first President of the United States, lived at Mount Vernon.
He was also a farmer and grew much of his own food.

(Card 2)
Mount Vernon is the mansion across the Potomac River with the red roof.

With over 11,000 square feet, Mount Vernon is bigger than 35 school buses.
It has 21 rooms and is 10 times the size of an average home was in Virginia in the 1770s.

(Card 3)
Maple tree- red and silver types
These leaves have a fan shape and produce “helicopter” seeds.
They have a different number of lobes, or points.
Sugar maple trees give us maple syrup.

(Card 4)
Oak- red and white types
These trees have a characteristic shape.
The leaves can either be pointed or rounded.
Oak trees produce acorns.

(Card 5)
Mulberry
These leaves have a mitten shape.
Mulberries produce fruit in the spring.
The fruit taste a little like sweeter blackberries.

(Card 6)
Sweet gum
These leaves look a bit like a star.
The bark has scaly ridges that look like a reptile’s skin.
Gumballs are pointy and spiky to protect the seeds inside.

(Card 7)
Tulip poplar
These leaves look like a cat’s face.
In the spring, trees have orange and green flowers.
These trees grow up to 90 feet tall, or about 26 kindergarteners stacked on top of each other.

(Card 8)
Pine
These leaves are long and pointy, so they’re called needles.
Pinecones protect their seeds with thick, hard scales.
All parts of the tree have a sticky sap inside them.

(Card 9)
Review=
Who used to live at Mount Vernon?
What kind of tree do we get syrup from?
Which trees produce acorns?
Which leaf shape looks like a cat’s face?
What are the leaves of pine trees called?

Activity rotation #4: Nature Exploration Center

Location: Unused area to the west of the Fishing Pier

During this field trip:
1. students will participate in play.
2. adults will learn about the importance of play.

Description: Did you know that Maryland has a Children's Outdoor Bill of Rights? Come spend some unstructured time with your students in our Nature Exploration Center. Spending frequent time in nature promotes students' well being by reducing attention difficulties as well as physical and emotional illnesses. Immerse yourself in our collection of natural loose parts, and let your imagination run wild.

Props= "Caution kids at play" sign, or could make an "Explore and play here" sign like Jug Bay Wetland Sanctuary.

Artifacts to include: sticks, rocks, shells, mulch pile, tree cookies for stacking, logs for hopping, stick and grapevine loom for weaving, etc.

Note to adults
The objectives of this activity rotation are to:
1. allow students to participate in play.
2. inform adults of the importance of play.

(Card 1)
Front=
What is play?
Play, although often trivialized, is *essential* to children's healthy development. It is defined as activities that are both freely chosen and child-directed. The consequences of play deprivation can include decreased physical dexterity, decreased creativity, attention difficulties, interpersonal difficulties, and decreased emotional regulation.
Back=
What opportunities do your children have to engage in play that is both freely chosen and self-directed?

(Card 2)
Front=
Why is play important?
Play is important for healthy physiological, cognitive, and social and emotional development. It fosters physical exercise, exploration and discovery, creativity, problem-solving, decision-making, and communication skills. (Appendix 3)
Back=
Can you think of a skill that you learned through play?

(Card 3)
Front=
What safeguards exist to protect play?
Play is so important that both Maryland and the United Nations (UN) have provisions to protect it. Maryland has a Children's Outdoor Bill of Rights, and the UN's Convention on the Rights of the Child- Article 31 addresses it. (Appendix 4 & 5)
Back=
Did you realize that play is a guaranteed right of children?

(Card 4)
Front=
Obstacles to play
Despite the prevalence of research supporting the importance of play, there are numerous obstacles to acceptance. Lack of appropriate spaces, inclement weather, safety concerns, pervasiveness of electronic devices, popularity of organized activities such as sports, over-scheduling, and the potential for "messiness" are often cited.
Back=
What is one way you can overcome an obstacle to play?

(Card 5)
Front=
Guidelines for play
Learn to hesitate before reacting. Perform a quick risk-benefit analysis to determine if intervention is necessary. If permitted the time and space to solve their own challenges, children will often rise to the occasion, and gain confidence in their own abilities.
Back=
How challenging would you find it to hesitate in intervening?

(Card 6)
Front=
Categories of play
Categories of play are recognized as predictable, repeated, patterns in children's play. They include, but are not limited to:

- trajectory= throwing, dropping, or pushing.
- rotation= spinning, twisting, rolling their bodies or objects.
- positioning= lining up, ordering, or arranging items.
- connecting= building chains, tying things up.

Back=
Have you noticed any of these normal behaviors in your child?

(Card 7)
Front=
Take a moment to reminisce
Many of our most memorable childhood experiences probably happened when an adult wasn't looking. They might not have even known where we were. Maybe we were taking a risk, solving a problem independently, or feeling a sense of ownership or autonomy.
Back=
Think back to your favorite childhood memories. Where were you? What where you doing? Who else was there?

(Card 8)
Front=
Continue learning about play
Want to learn more about the importance of play? Check out the following resources.
Back=
Alliance for Childhood
American Academy of Pediatrics
Children & Nature Network
National Association for the Education of Young Children
Nature Explore
North American Adventure Play Association
Play Corps
US Fish & Wildlife Service
US Play Coalition

Potential schedule

If they're on site for 3 hours, 2-activity rotation option

Table 11. Two-activity rotation option

10:00am-10:30am*	Introduction Bathroom break and/or snack Acclimation
10:30am-11:30am (1 hour)	Rotation #1
11:30am-12:00pm*	Lunch Bathroom break PLAY- Get the wiggles out!
12:00pm-1:00pm (1 hour)	Rotation #2

If they're on site for 3 hours, 3-activity rotation option

Table 12. Three-activity rotation option

10:00am-10:20am*	Introduction Bathroom break and/or snack Acclimation
10:20am-11:05am (45 min)	Rotation #1
11:05am-11:30am*	Lunch Bathroom break PLAY- Get the wiggles out!
11:30am-12:15pm* (45 min)	Rotation #2
12:15pm-1:00pm* (45 min)	Rotation #3

*The Introduction and Lunch periods are convenient times to flex the schedule to make up for lost time due to late arrivals, etc.

While many sites (Camp Schmidt, Mount Vernon) rushed students through activity rotations in attempt to "cover" everything scheduled, I suggest going for depth rather than mere coverage. It is more developmentally appropriate and more in line with our goals. Historic St. Mary's used to be more rigid in their programming, but now they allow for more flexibility. "That's when kids can self direct a bit and magic moments occur." Chesapeake Bay Environmental Center advised, "Take time to embrace teachable moments as they pop up." Jug Bay Wetlands Sanctuary echoed that. "Slow trail walks allow for opportunities to present themselves." Our aim should be to send students home excited and inspired to share their memories.

Standards alignment

Aligning field trips to learning standards is non-negotiable in order to be accepted by principals and teachers, who are the gatekeepers of field trips. Because these field trips will be self-guided, I suggest using verbiage similar to Morton Arboretum. The Veterinarian, Scientist, and Explorer field trips "have the potential to address" certain standards, as outlined below. The Nature Exploration Center is not meant to address specific standards, though it could be used to fulfill Maryland Children's Outdoor Bill of Rights.

Next Generation Science Standards

Life Sciences
K-LS1-1 From Molecules to Organisms: Structures and Processes
1-LS1-1 From Molecules to Organisms: Structures and Processes
1-LS1-2 From Molecules to Organisms: Structures and Processes
1-LS3-1 Heredity: Inheritance and Variation of Traits

Earth's Systems
K-ESS2-2 Earth's Systems
K-ESS3-1 Earth and Human Activity
K-ESS3-3 Earth and Human Activity
(Interdependent Relationships in Ecosystems- Animals, Plants, and Their Environment)

Common Core State Standards

Science
Grade PK, K, 1
Standards 1 Skills and Processes (Constructing Knowledge; Applying Evidence and Reasoning; Communicating Scientific Information
A 1.a.b.c.g,
B.1.d
C.1.a.b.c.d.e

Health
Grade PK and K
Standard 6 Nutrition and Fitness (Food Production)
B.1.a

Maryland Environmental Literacy Standards

Standard 1- Environmental Issues
1.A.1 Identify an environmental issue.
1.A.2 Develop and write research questions related to an environmental issue.
1.A.3 Given a specific issue, communicate the issue, the stakeholders involved and the stakeholders' beliefs and values.
1.A.4 Design and conduct the research.

Standard 3- Flow of Matter and Energy

3.A.1 Demonstrate that matter cycles through and between living systems and the physical environment, constantly being recombined in different ways.
3.C.1 Analyze and explain the movement of matter and energy through Earth's systems and the influence of this movement on the distribution of life.

Standard 4- Populations, Communities, and Ecosystems
4.A.1 Explain how organisms are linked by the transfer and transformation of matter and energy at the ecosystem level.
4.B.1 Analyze the growth or decline of populations and identify a variety of responsible factors.
4.C.1 Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.
4.E.1 Provide examples and evidence to show that a greater diversity of genes, species and/or environments increases the chance that at least some living things will survive in the face of large changes in the environment.

Standard 5- Humans and Natural Resources
5.A.1 Analyze the effects of human activities on Earth's natural processes.
5.A.2 Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.
5.B.1 Analyze, from local to global levels, the relationship between human activities and the Earth's resources.

Standard 6- Environment and Health
6.B.1 Describe and explain that many changes in the environment designed by humans bring benefits to society as well as cause risks.
6.C.1 Analyze and explain that human activities, products, processes, technologies and inventions can involve some level of risk to human health.

Standard 7- Environment and Society
7.A.1 Investigate factors that influence environmental quality.
7.C.1 Investigate cultural perspectives and dynamics and apply their understanding in context to:
7.D.1 Understand how different political systems account for, manage, and affect natural resources and environmental quality.

Standard 8- Sustainability
8.C.1 Investigate and make decisions that demonstrate understanding of how the dynamics of economic systems affect the sustainability of ecological and social systems.
8.D.1 Investigate and make decisions that demonstrate understanding of how the dynamics of social and cultural systems affect the sustainability of ecological and economic systems.
8.E.1 Investigate and make decisions that demonstrate understanding of how the dynamics of ecological systems affect the sustainability of social, cultural systems and economic systems.
8.F.1 Apply knowledge and skills to investigate and implement personal and collective decisions and actions on an individual, local community, national, and global levels in order to achieve sustainability.

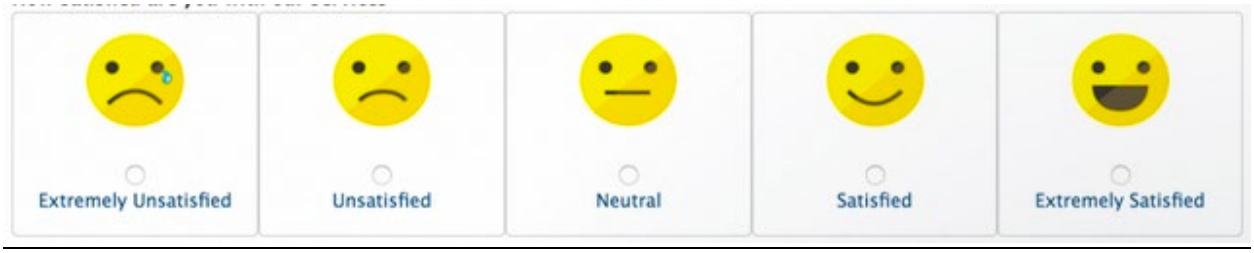
Evaluation

Formative assessment by the facilitating Foundation staff person should begin the same time as piloting. It is conducted as a program is being developed. The following Program Report Form, adapted from the Ithaca Children's Garden, should be completed each time there is a program. The same form could be used again with the vetted program, as summative assessment, or another tool developed as the program evolves.

Table 13. Program Report Form

Program date	Program time	Program leader
# of Participants	# of Groups	# of Teachers/Parents/Chaperones
Field trip activity rotations 1. 2. 3.		
Program highlights		
Areas for growth		
Were field trip objectives met?		
Suggestions for improving next time?		
How successful would you rank this program on the following: (1=low, 5= high)		
• Engagement= ease of holding attention 1 2 3 4 5		
• Cultivating appreciation for natural world 1 2 3 4 5		
• Enjoyment= smiles, comments, etc. 1 2 3 4 5		
• Hands-on, engagement of all senses 1 2 3 4 5		
Follow up actions needed Action needed By whom When/Urgency 1. 2. 3.		

Because it is useful to also solicit feedback directly from guests on site, I suggest using a Student Report Form with a simplified version of the Likert Scale. By using emotive icons, students can participate with teacher or chaperone assistance. This tool could be handed out at the last activity rotation, or used as an exit ticket before students board their buses. Receiving a Foundation inked hand stamp or other simple token could be motivation enough for early elementary students to comply. Alternatively a quick exit game or ritual could be developed.



(Question Pro survey using Likert scale)

Question about the program can be juxtaposed with examples of evidence. These should address the goals determined at the inception of this project.

Was your program…

1. Hands-on? (Evidence= students engaged their senses)
2. Flexible? (Evidence= adaptable, something for everyone)
3. Enjoyable? (Evidence= fun, smiles)
4. Inspiring? (Evidence= asked questions and made comments)
5. Unique? (Evidence= something different from others)

More nuanced evaluation can be solicited from teachers via Survey Monkey.

Challenges

I determined some potential challenges in my SWOT analysis at the onset of this project. Some of the weaknesses are not negotiable. The Colonial Time Warp field trip program will continue to take priority over a nascent early elementary program, because it is well attended and generates reliable income. The National Colonial Farm site will continue to be unavailable because it is already used for the other field program. The hot and humid Mid Atlantic weather persists, as do the insects. Finally, it is doubtful that the National Park Service will see fit to build additional bathrooms to alleviate the bottleneck there.

Other weaknesses, however, could be more feasibly addressed in the not so distant future. These are primarily limited by finances, and therefore potentially more attainable. Additional funding could be used to purchase ponchos and rain boots so that early elementary learners could enjoy field trips in all types of weather comfortably. Funding could pay for improved wayfinding so that more areas of the site could be accessed in more meaningful ways. Lastly, new funding could enable the hiring of additional educational staff.

Morton Arboretum shared concrete suggestions for a multi-faceted marketing plan like theirs. They mined lists available from their regional offices of education. The Foundation could do the same, beginning with Prince George's County and Charles County. Their websites, calendars of events, and staff directories are accessible online. With information from these sites, school administrators could be targeted, outreach events could be attended, and teacher databases could be compiled for use. If staff time is a limitation, the Foundation could begin by choosing and implementing one facet. One way to begin would be to seek out a student studying Business, Marketing, or Education and offer a database project for course credit. As visitorship and subsequent income increase, allocating additional staff time should be justifiable.

The early elementary field trip program could be marketed to a variety of groups such as: home school student co-ops, un-schooling families, vacation bible schools, church youth groups, daycares, summer camps, Montessori groups, daycare centers, 4H and ecology clubs, and Scout clubs. (Lion Scouts and Tiger Scouts for boys, Daisies for girls.) Additionally, students with special needs and alternative schools might embrace the flexibility of this program.

Funding

In order to ensure financial sustainability, funding should come from a diversity of sources. While the most commonly cited sources included site operating budgets, grants, school field trip funds, PTA/PTO funds, fees collected from students, and federal/state/county agencies, it is necessary to diversify even further. Less common avenues to explore include: affinity groups, Friends Groups, donors, crowdfunding platforms, and volunteer groups.

- Affinity groups such as those interested in orienteering, birding, fishing, and gardening may be poised to donate funding, or in-kind gifts of goods, services, or time.
- Friends' Groups could assist in developing relationships and fundraising.
- Donors might be inspired to donate if their impact is quantified. Illustrating how $250 could help provide one bus to deliver a class of 30 students could inspire the development of a bus scholarship program.

- Crowdfunding platforms, such as Go Fund Me, could be used to revise or expand existing programs.
- Volunteer groups, such as Master Naturalists or Master Gardeners, could be leveraged to develop a field trip corps to assist with field trips.

Both free and subscription-based searchable databases exist to assist in finding grant opportunities. Grant Watch, Assistance Listings, Foundation Center, USASpending.gov, and Grants.gov are examples of the free type. Larger institutions and public libraries may have access to the subscription-based databases.

It is helpful to think about different categories of granting institutions. Institutions can be federal, state, or private. The private sector is then further divided into corporations, foundations, and charities. Corporations are profit-driven organizations. Foundations are non-profit organizations, established by an individual, family, or corporation, that are funded by private monies. Charities are also non-profit organizations, but are established and funded by public monies.

Reliable funding examples in my study included: the Chesapeake Bay Trust (CBT), National Oceanic and Atmospheric Association (NOAA), Target, PNC Bank, and Kids Gardening. Additional opportunities to investigate include:

- federal institutions such as- Center for Disease Control (CDC), Environmental Protection Agency (EPA), Fish and Wildlife Service (FWS), Institute of Library and Museum Services (IMLS), National Institute of Food and Agriculture (NIFA), National Institute of Health (NIH), National Park Service (NPS), National Science Foundation (NSF), and National Trust for Historic Preservation (NTHP).
- state institutions such as- Maryland Department of Agriculture (MDA), Maryland Historic Trust (MHT), and Maryland Department of Natural Resources (DNR).
- corporations such as- Annie's Home Grown, Dominion Energy, Pepsi-Cola, State Farm, Toyota, and Wal-Mart.
- foundations such as- American Farm Bureau, and the Meyer Foundation.
- charities such as- American Heart Association (AHA), American Pediatric Association (APA), Earth Watch Institute, National Fish and Wildlife Foundation (NFWF), National Recreation & Park Association (NRPA), National Wildlife Federation (NWF), and Sustainable Forestry Initiative SFI).

Another approach is to reduce expenses, as opposed to increasing revenue. Volunteers can be leverage to this end. Although the value of volunteer time in Maryland is slightly higher than the national average, $26.79 per hour compare to $24.69 per hour, there are still expenses involved. Volunteers that work with children must undergo background checks and training, which require an initial financial investment. Retention is also a consideration, as their value increases when the duration of their commitment increases.

Logistics

Timing-

The Foundation currently hosts field trips from October- November in the fall, and April- June in the spring. The early elementary program would also be offered during these times.

Since fall is the Foundation's least busy season, there is an increased potential to deliver early elementary field trips during this time. Although teachers are often unable to take field trips in the first few weeks of school for various reasons, October and November have much potential. Sharing field trip options with teachers in late summer and early September would be ideal. A marketing tactic would be to highlight the better weather (cooler, fewer bugs) in the fall.

Similarly, there is also an increased potential in May and June. Older students are typically obligated to complete testing at the end of the school year. Early elementary students are exempt from this, and more likely to continue taking field trips.

Group size

Initially, group size should be limited to approximately 30 students. As the Foundation's comfort level managing the program grows, group size should increase to 50-60 students. As long as self-guided field trips remain de facto, this will probably be the limit that can be accommodated. If at some point guided field trips become incorporated, then there would be potential to serve twice as many students.

Supervision ratios

Although the average supervision ratio in this study was 1:8, it would ideally be much lower. Because of developmental stages of the students and the nature of the site, 1:5 would be more appropriate. While large numbers of chaperones are detrimental to the Colonial Time Warp program because they detract from the experience, that is not the case with the early elementary program. In this case, chaperones are welcome as they will enrich the student experience.

Accessibility and accommodations

Because this program is intended to be self-guided, flexible, sensory, and less content-heavy, it is easily adaptable to students with differing abilities. Because other sites neglect this issue, or merely mention it in passing, there is an opportunity to be proactive and market this as an inclusive program. Robinson Nature Center does something similar with their Sensory-Friendly Nature Study field trip option, though it is only intended for groups where the majority of students require special accommodations.

Physical accessibility also needs to be addressed. The Scientist field trip rotation may pose a problem. It is unclear if the bridge over the wetland is ADA compliant. There are ramps for ingress and egress, but the bridge width may be inadequate.

Expectations of teachers & parent chaperones

Teachers and parents will be expected to lead each of the field trip rotations. They will be provided with props and prompts to facilitate the experience. No special training or knowledge is required.

Unlike many other sites, chaperones should not be charged a fee. Much is expected from them during the field trip, and the more chaperones there are the better the student experience will be. Charging for chaperones seems counterintuitive from both a marketing perspective and an accessibility perspective. We want less barriers to visitorship.

Safety

Safety considerations varied among sites, but typically included: personal health, the physical site, behavioral expectations, weather, and natural elements. Being proactive about potential concerns, clearly addressing them, and sharing this information with guests will help to minimize incidents.

Table 14. Safety considerations

Potential guest concern	**Approach**
Insect bites	Prevention- Wear bug spray Remediation- Tick checks
Insect stings	Education- Why you don't need to be scare.
Sun exposure- burns, dehydration, over heating	Prevention- Wear sunscreen, drink plenty of water
Poison ivy	Education- What happens when you are exposed? What does it look like? Where does it grow?
Animals- Black rat snake, Northern water snake, Green rough snake, 5-lined skink	Education- Why are these animals important? What service do they provide us? How to avoid them? What to do if you see one?
Germs/dirt	Education- Consequences of not getting outside & overusing antibacterial tools
Water safety	Prevention- No wading deeper than ankles (or whatever chosen body part)

Addressing guests' fears is also safety issue. With some forethought, the fight or flight response can be avoided. Both Jug Bay Wetland Sanctuary and Camp Schmidt proactively addressed potential guest fears. I recommend the Foundation does the same.

Staffing & staff training

Basic field trip support will be provided by one Foundation staff person. This person will be responsible for field trip preparations, greeting and orienting guests upon arrival, providing general support and assistance to teachers and parents via 2-way radio during the field trip, collecting formative evaluations, handling emergencies, dismissing the field trip, and cleaning up. This model could be long-standing, or a step toward guided field trips when resources allow further development.

Because the current staff only have experience with older students, it will be necessary for them to learn some basic differences that apply to early elementary students. Two good resources for basic information on child development include the U.S. National Library of Medicines medical encyclopedia (Medline), and the National Association for the Education of Young Children' (NAEYC) website. Medline has a document on preschooler development focused on children 3-6 years old that addresses their physical, language, and behavioral development. https://medlineplus.gov/ency/article/002013.htm (See Appendix 6) NAEYC offers professional development online, searchable by topic. The topics most relevant to the proposed field trip include: developmentally appropriate practices (DAP), guidance and challenging behaviors, play, and social and emotional development. https://www.naeyc.org/resources/topics (See Apendix 6)

Beyond learning child developmental basics, there are many online tools for connecting younger audiences with nature. The Children & Nature Network (C&NN) and Maryland Association for Environmental & Outdoor Education (MAEOE) are two good resources.
C&NN has a Training Center and a Research Library. MAEOE has a substantial Professional Development section and a Resource Library

Staff and any volunteers or others working with this pre-K – 1st grade age group should be more familiar with youth development. It is useful to think about youth development in categories. The generally accepted categories include: physiological development, cognitive development, and social and emotional development.

Physiological development pertains to the physical development. Physiological characteristics of young children include: needing to eat and toilet frequently, an inability to sit still for long periods of time, and rapid growth. Considerations should include: offering snack opportunities, being proactive about toileting, providing opportunities for movement, and getting down on their level when interacting.

Cognitive development pertains to neurological development. Cognitive characteristics include: a short attention span marked by moments of deep focus, exploration of the senses, and an inability to accurately conceptualize time. Considerations should include: having clear and consistent rules offered in developmentally appropriate language, helping to redirect attention, offering reminders, providing sensory opportunities, and giving warnings about transitions.

Social and emotional development pertains to expression and emotional development. Social and emotional characteristics include: limited capacity for self-expression, limited impulse control, and a growing ability to identify and regulate emotions. Considerations should include:

recognizing and helping students to identify their emotions, and asking questions to allow them to share their perspective and expertise.

Teacher tools

Sites develop teacher tools for two primary reasons. One is to make planning and executing field trips easier for teachers. Teachers are busy and have many other responsibilities and challenges to deal with on a daily basis. The other reason is to make field trips more meaningful for students. In order to make the field trip process as easy as possible, all aspects need to be considered, from website navigation to payment options, and beyond.

Because creating these tools all at once would be overwhelming, I suggest two phases of development. Initially, begin by developing "Planning tools for teachers" and "Planning tools for other adults." Some sites elected to include Spanish versions of these materials, and considering the frequency with which I overhear Spanish spoken by Foundation guests, I would suggest the Foundation translate their documents. One way the Foundation may consider getting this done is to seek out a student studying Languages or Museum Studies and offer the translation project for course credit.

Initially, the Foundation needs to develop a clear menu of field trip options that are aligned to learning standards. This will enable teachers, principals and other administrators to make informed decisions about visiting the Foundation . Offering a checklist-style planner could assist teachers in keeping track of which tasks need to be completed (1 month/2 weeks/1 week/ 1day) before their visit.

Communicate expectations to other adults via "Planning tools for other adults," to help reduce misunderstandings. Letters to parents and chaperones can introduce what to expect during their child's field trip. Driving instructions that include a detailed map, explicit driving directions, and parking instructions can help ensure all participants arrive as scheduled.

Secondarily, develop additional support materials. "Preparing for your visit" can include tools like pre-visit educational materials, maps, videos, key word lists, fact sheets, and/or a "social story" to prepare everyone for their visit. These typically inform the guests of what to expect (see, smell, hear, taste, touch,) address potential fears, and include pictures of the site.

Lastly, "Day of your visit" and "In lieu of a visit" sections can include tools like a group-making worksheet, podcasts, post-visit educational materials, links to additional resources, and hints for future visits.

Timeline

Initial piloting of one or more activities could begin with early elementary students in April-June of the 2018-2019 school year. Subsequent testing could occur during the summer of 2019 with daycare groups, vacation bible schools, summer camps, and scout groups. Formative assessment should occur simultaneously, and revisions made during the summer of 2019.

The resulting program could have a soft launch and continued assessment during the 2019-2020 school year, spanning October- November and April- June. Secondary revisions could be made during the summer of 2020.

The vetted program could have a hard launch, complete with active marketing and formative assessment during the 2020-2021 school year. If the self-guided program is successful, expansions could be considered during the summer of 2021. If additional resources became available at some point, supplemental staff and guided field trips could be reconsidered.

CHAPTER 8

FUTURE CONSIDERATIONS

My familiarity with the Foundation puts me in a unique position to suggest potential expansion opportunities. As far as the actual site itself, there are numerous areas that could be used for future field trips. See Site Expansion list below. Additionally, there are many other field trip topics that could be developed with minimal effort. See Activity Expansion list below.

Site Expansion

An assessment of the site showed that there are numerous potential areas for expansion.

- Near the Education Center (EC)
    - Benches near maple trees, rain garden
- Near the Visitor Center (VC)
    - Picnic tables, pollinator garden
- Near Fishing Pier (FP)
- Pumpkin Ash Trail (PA)
    - Trail head, woodland, boardwalk, shoreline
- (Future) Nature Exploration Center (NE)
- Kitchen Garden (KG)
- Museum Garden (MG)
- Event Kitchen (EK)
- Fishing Pier (FP)
- Boat dock (BD)
- Conservation Pond (CP)
    - Bird blind, hillside
- Meadow (MD)
- Barnyard (BY)
- Shoreline beyond boardwalk (SH)

Activity Expansion

Many of the sites visited offered field trips that varied with the seasons. The Foundation could do something similar, leveraging their pre-existing resources. In the fall, they could focus on shearing the sheep , feeding the piglets acorns, or preparing the gardens for fall. In the spring, they could focus on wildlife found in puddles, or the baby animals such as lambs, rabbits, and chicks. These activities already take place, so it could be a matter of a staff member sharing a bit about those activities, and then allowing students time to explore on their own.

Because there are so many creative-minded staff members, and sometimes a lack of work in the winter, they could be tasked with a special project. Interpreters could develop site-themed stories that feature: heritage breed animals, heirloom crops, resident osprey, pigs Queenie and Scrapple, or past and present lives of the Piscataway people. Illustrations and printing could be

done by the Marketing Manager. The resulting stories could then be used in both on- and off-site programming, incorporated into marketing pieces, or sold at the Visitor Center.
Two more age appropriate activities could be added to the self-guided field trip options, with a minimal investment of time and energy. Colonial dress up and Colonial cooking would diversify the existing environmental science focus by adding in a historical element. Dress up could include a variety of hats, smocks, and eyeglasses. Cooking could include wooden spoons, dipping gourds, cast iron pots, baskets, and strainers. These activities could take place at the Event Kitchen and Fishing Pier. These minimal inputs would provide adequate stimulation for imaginative play.

CHAPTER 9

BEYOND THE SCOPE OF THIS PROJECT

There were several associated challenges that could impact the success of this proposed field trip program, but were beyond the scope of this project. Branding, both of the field trip and the site, are confusing. Wayfinding is also a persistent issue. Lastly, funding, specifically the majority of funding coming from a single source, could be problematic.

CHAPTER 10

CONCLUSION

- Challenges
  - The Foundation experienced several transitions during my tenure, beginning with the Executive Director resigning, and ending with the Director of Education resigning.
  - School field trips don't happen in the summer, so I was unable to observe school field trips. I had to observe other types of programs such as camps, drop-in programs, etc.
  - Staff were often busy with summer camp.
- Successes
  - Many people were willing to have me visit to observe programming, or to have a phone conversation.
  - Much information was available on organization websites, enabling me to maximize the use of peoples' time.
  - I found a way to record all of my findings and keep track of correspondence. This enabled me to significantly expand my regional network.
  - Unanticipated leads and introductions ended up being incredibly valuable.
- Advice for others
  - If you want to see field trips in action, you'll need to observe during the school year.
  - Be very selective when choosing sites. The investment of time, and travel expenses quickly accumulate. When practical, combine visits to nearby locations into a single day.
  - Be flexible and ready to deviate from the script as you learn more.
  - Be determined to glean something from every visit or conversation, even if it is not what you had originally expected.
  - If possible, meet with local teachers to solicit their input and feedback.
- Future research
  - Investigate student pre-service teacher training requirements in science.
    - Could find a way to target new teachers and boost their confidence.

APPENDICES

Appendix 1
The History of Environmental Education in Maryland

For over 40, Maryland has forged a progressive path toward environmentally literate citizens. Today, half of Maryland's counties have outdoor education centers to support environmental education experiences for students.

1970
The Environmental Education Act
The nation's first environmental education law

Mid-1980's
The Chesapeake Bay Program and the Department of Natural Resources joined resources to create the Chesapeake Bay Trust (CBT)
Focus on environmental education in school curriculum, with an emphasis on student projects

1990
The Environmental Education Act
Maryland to articulate student requirements for grades Pre-K though 12

2008
Maryland Partnership for Children in Nature
Maryland No Child Left Inside

2010
Maryland first state in nation with an environmental education graduation requirement

"Case Studies of State Environmental Education Policy Victories in California, Maryland, and Oregon"
James L. Elder, Campaign for Environmental Literacy
04/04/2017
Edited by Angel Braestrup, Curtis and Edith Munson Foundation

Appendix 2
Completed interview guides for Sites Visited and Sites Consulted

Begins on next page

Sites Visited

1. Chesapeake Bay Environmental Center
2. Claude Moore Colonial Farm
3. Frying Pan Farm
4. Historic Sotterley Plantation
5. Historic St. Mary's City
6. Irvine Nature Center
7. Jefferson Patterson Park & Museum
8. Jug Bay Wetlands Sanctuary
9. Maryland Historical Society
10. Mount Vernon
11. Nanjemoy Creek Environmental Education Center
12. National Aquarium
13. Oxon Hill Children's Farm
14. Schmidt Outdoor Education Center (Camp Schmidt)

Organization
Chesapeake Bay Environmental Center

Type
Environmental center

Location
600 Discovery Lane
Grasonville, MD 21638

Contact person
Karen Bogue

Their position
Early Childhood Education Coordinator

Their email address
kbogue@bayrestoration.org

What is your organization's mission?
The mission of the Chesapeake Bay Environmental Center is to promote stewardship and sustainability through environmental education and habitat restoration.

What guided field trip programming do you offer for Pre-K through 1st grade students?

https://www.bayrestoration.org/school-field-trips/

Catch a Bay Critter- Appropriate for Kindergarten-HS, 1-2 hours. Available April-October

After hiking down a scenic nature trail, participants will use seining and dip nets, while wading in the bay and tidal pools They will catch and identify many different species of animal life to determine the health of the Chesapeake Bay and learn the importance of this spectacular estuary and the surrounding wetland ecosystem! **Students will get wet in this program! Depending on tide, students may be walking through water up to their thighs, but typically up to their knees.** Students must bring a change of clothes and shoes that can go into the water, or else they will not be able to participate in this program.

Rotten Log Scavenger Hunt- Appropriate for pK-3rd grade, 1 hour. Available year-round

Discover the importance of invertebrates in our pine forest ecosystem by participating in a scavenger hunt. Students will observe the role played by invertebrates in breaking down rotten logs and returning nutrients to the soil.

Do you offer additional types of programming for Pre-K through 1st grade students?

Creepy Crawler gardening classes
https://www.bayrestoration.org/creepy-crawlers-preschool-gardening/

Hands-on environmental education for our youngest crowd! Creepy Crawler gardening classes are open to 2-5 year olds accompanied by an adult. Classes are held on Mondays from 10:00 am-11:15 am. Pre-registration is required!
Each class involves hands-on work in our garden, games or arts and crafts, and a snack. These classes are held rain or shine and everyone should dress for the weather.

Environmental education programs for preschools
https://www.bayrestoration.org/early-childhood-environmental-education-programs/
Crafted in line with Maryland's Early Childhood Learning Standards, our classes designed for 2-5 year olds will explore various topics of the natural world – from critters to composting – through games, crafts, live animals or artifacts, stories, and most importantly, hands-on participation.

Each two hour class will include: instruction time, craft, story, song, game or movement, and hands-on fun. Cost is $8 per student with a minimum of $100 and a capacity of 30 students per program.

Do you have any self-guided field trip options?

Occasionally fieldtrips will have a self-guided component, but it is rare and usually with older groups.

Self-guided options are more frequently used by families.

https://www.bayrestoration.org/self-guided-experiences/
Discover the flora and fauna of CBEC's 510-acre wildlife preserve. Spend an hour or spend a day exploring native woodlands, tidal marshes, and meadows through these and other specially designed self-guided experiences.

Independent explorations have been designed for families, community and school groups, or even individuals who wish to discover CBEC on their own. Explore our many themed walking trails, search for over 200 species of birds regularly seen at CBEC, observe many habitats and numerous types of plants and wildlife. Return again and again to discover the rich, ever-changing world of the Chesapeake Bay's tidal marshes throughout the seasons.

There is no admission fee to explore the property on your own, but donations are appreciated to help us maintain our trails. Don't forget to dress for the weather and bring along a water bottle or snack. Indoor and outdoor restrooms and picnic facilities are available. Stop in at the Visitor Center for maps, materials, and more information. Click here to download the Self-Guided Experiences brochure.

Self-Guided Hikes, Tiny Things Tour, Themed Hikes, Meet the Trees!, Explorer's Backpack, Hummingbird and Butterfly Garden Exploration, Geocaching, iNaturalist Observations.

(She attended Chesapeake Maritime Museum as a parent on a 1st grade fieldtrip, and was not impressed. They did a lot of wandering. She suggested sharing a packet with navigation and activities- scavenger hunt, clues, word hunt, etc. to keep them engaged.)

Visit date
06/18/2018

Program observed
Creepy Crawler gardening class

Program type
One of a recurring series

How do you evaluate success in your fieldtrip program?
Survey Monkey evaluation

1. What programs and activities did your group participate in?
2. What did you, as a teacher, enjoy most about the field trip?
3. What did your students enjoy most about the field trip?
4. How satisfied are you with these aspects of the field trip?
   Communication with Education Manager while planning the trip
   Cost of the field trip
   Volunteers leading the programs
   Facilities
   Management of students during programs
   Accommodating students with disabilities
   Please feel free to comment on any of these aspects
5. Do you have any suggestions for improving our programs or overall field trips?
6. To fit in with your curriculum, are there any additional programs you would like to see offered during field trips?
7. Would you be interested in outreach programs brought to your school? We offer these programs mid-November through March.
8. Do you plan to revisit our facility?

How are fieldtrips staffed?
Staff educators and volunteer assistants

What is expected of parents and teachers?
Responsible for managing student behavior.
Expected to be active participants.
Expected to assist students.

What is your supervision ratio?
5:1

What is the maximum group size you accommodate?
30 or less

Scheduling

Program request form online

3 station rotations
1-2 hours on site

Can easily shave time off of intro, lunch, or closing if they're running late.
After lunch can be a challenging time. If possible, give them a place to "run it out."
If a group arrives late, always ask the teacher and bus driver if there is wiggle room.

Karen helped me to plan out two potential schedule options for a 10am- 1pm visit. One is for 2 activities, the other is for 3 activities, both totaling 3 hours.

10- 10:15 Opening (15 minutes)
10:15- 11:15 Activity 1 (1 hour)
11:15- 11:45 Lunch (30 minutes)
11:45- 12:45 Activity 2 (1 hour)
12:45- 1:00 Closing (15 minutes)

<or>

10- 10:15 Opening (15 minutes)
10:15- 11:00 Activity 1 (45 minutes)
11:00- 11:45 Activity 2 (45 minutes)
11:45am- 12:15 Lunch (30 minutes)
12:15- 12:45pm Activity 3 (30 minutes*)
12:45- 1:00 Closing (15 minutes)

Developmental considerations for this age group?

Use movement activities to get them warmed up and keep focused.

Clearly state, and repeat, expectations.

Involve students in safety reviewing rules, instead of passively telling them.

Clear warnings about transitions.

Use of preview and review.

They always have to use the bathroom.

What activities work well/don't work well for this age group?

Ask questions to engage students. Allow them share their experience and expertise.

Take time to embrace teachable moments as they pop up. (turtle nest predation example)

Don't expect them to sit still.

Are your field trips aligned to standards?

More so the ones for older students

Any special safety concerns to be aware of?
Very matter of fact about rules.
No swimming, wading OK.
Shoes stay on your feet.
Feet stay on the group.
Tick check encouraged.
Sunscreen and bug spray encouraged.

Do you require or offer any type of parent/teacher training? What type?
No

Special notes

Very clear expectations of parents, teachers, students, and staff.

Pre-trip information letter for teachers, shared with me
Pre-trip information letter for parents

Organization
Claude Moore Colonial Farm

Type
History museum

Location
6310 Georgetown Pike, McClean, VA 22101

Contact person
Clara Everhart

Their position
Office Manager

Their email address
ceverhart@1771.org

What is your organization's mission?
The Farm's mission is to educate the public about early American daily life and agriculture through participation and involvement in an 18th century Virginia tenant family farm as well as through other activities.

What guided field trip programming do you offer for Pre-K through 1st grade students?
None.

Do you offer additional types of programming for Pre-K through 1st grade students?
http://1771.org/programs/

Farm Skills Program
This hands on program teaches important farm skills and includes a farm visit. Paid reservations required.

Corn pounding, Toys and games, Rope making, Spinning wool, Laundry or Candle making (seasonal,) Carding wool/Roving, Nature play area.

Do you have any self-guided field trip options?
No.

Visit date
o7/12/2018

Program observed
Farm Skills

Program type
One-off program

How are fieldtrips staffed?
(Farm skills, not a field trip.)
One staff person greets and orients group, then remains on site to oversee everyone.
Docent-lead stations.

What is expected of parents and teachers?
Camp counselors were responsible for time and behavior management.

What is your supervision ratio?
N/A. Older age group.

What is the maximum group size you accommodate?
Multiple camp groups, 75+

Scheduling
Reservations required.
Camp counselors managed time based on student interest.

Developmental considerations for this age group?
N/A. Older age group.
Sensory activities work well for younger students.

What activities work well/don't work well for this age group?
N/A. Older age group.
A side conversation, after I observed Farm Skills, was helpful.
This age group is focused on life cycles in school.

Could have an activity where students work to earn tobacco notes that are then used to purchase goods. Potential activities could be doing laundry, removing tobacco horn worms, stuffing pillow, etc.

Could have an agriculture activity related to food and groceries. Potential activities could be shopping for corn, root vegetables, broad beans, and filling a basket.

Could have a game station.

Could have pre-made corn husk dolls for imaginative play.

Are your field trips aligned to standards?
No, programs are not.

Do you require or offer any type of parent/teacher training? What type?
No, stations led by docents.

Special notes

They are also part of the National Park Service, and in danger of being shut down at the end of 2018.

Site is analogous to Accokeek Foundation, but located in Virginia.

Great nature play & gross motor play area- tether ball, balance beams, stumps.

Simple, temporary signage for activities, hung from a rope on a tree.

They have full immersion programs, including a day option and overnight option.

Organization
Frying Pan Farm

Type
Farm

Location
2709 West Ox Road,
Herndon, Virginia 20171

Contact person
Patrick McNamara

Their position
Naturalist/Historian Senior Interpreter

Their email address
patrick.mcnamara@fairfaxcounty.gov

What is your organization's mission?
Frying Pan preserves and interprets farm life of the 1920s to 1950s.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Pre-school Farm Mystery: Who Laid the Eggs?
The Farm Mystery program illustrates how the farmer provides farm birds with food, water and shelter and in return they produce eggs for the family. Participants get a guided tour of the farm birds and guess who laid each of the different eggs in an egg carton.
Fees: In-county: $4 per student, Out-of-county: $5 per student
Length: 30 Minutes

Kindergarten: The Milky Way: A Day in the Life of a Dairy Animal
Milk a model cow and meet a farm animal. From babyhood to milking, learn what life is like for dairy animals.
Fees: In-county: $4 per student, Out-of-county: $5 per student
Length: 30 Minutes
SOL Tie Ins: Science: K.1, K.6, K.7

1st Grade: The Farm Family
Through discussion and hands-on activities, learn about traditional farm family roles and how they compare to modern family roles.
Fees: In-county: $5 per student, Out-of-county: $6 per student
Length: One hour
SOL Tie Ins: History and Social Science: 1.1, 1.7, 1.9

Do you offer additional types of programming for Pre-K through 1st grade students?
Drop-in programs
Recurring series

Summer camp

Do you have any self-guided field trip options?
Their self-guided tour is not very popular.
They have nature backpacks with 6 stops. Each stop has a post and is numbered.

Visit date
07.02.2018

Program observed
Little Hands on the Farm, led by Adam Shubert

Program type
One of a recurring series

How do you evaluate success in your fieldtrip program?
They especially target larger groups. A paper questionnaire is included in their initial packet. (Mailed ahead of time. Has a schedule and scavenger hunt.) They use a 1-10 rating system. They once tried an electronic version but it had a very low return rate.

How are fieldtrips staffed?
Part time facility staff are paid hourly. Attempted to solicit community volunteers previously but were not successful.

What is expected of parents and teachers?
N/A

Scheduling

Groups usually arrive by 9:45/10am
Groups usually depart by 12/12:30/1pm

Pre-K
15 minute talk about birds (chicken)
15 minute tour
Which laid which egg game (compare/contrast)
Usually only 1-2 smaller groups. If 3-4 groups then they hand out an A/B/C/D rotation schedule.

K/1st grade
Group intro= give a sense of place, the rules, housekeeping, prep for successful visit
1- content/tour (30 minutes)
2- wagon ride
3- scavenger hunt (30 minutes)
4- lunch

Developmental considerations for this age group?
Stories are enjoyed.

Special notes

Frequently asked questions (for each grade level)

- Program payment
- Program reservation and cancellation
- Program description
- Program accessibility
- Accommodations

Organization
Historic Sotterley Plantation

Type
History museum

Location
44300 Sotterley Lane, Hollywood, Maryland 20636

Contact person
Jeanne Pirtle
Katherine Humphries

Their position
Education Director
Education Assistant

Their email address
education@sotterley.org
edteam@sotterly.org

What is your organization's mission?
To preserve Sotterley Plantation's historic structures and natural environment and use the powerful stories of our land, lives, and labor to bring American history to life while serving as a cultural resource.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Tidewater Plantation Life
Appropriate for younger students in Grades 2-6, children are immersed in the daily lives of children on a Plantation using hands-on activities that illustrate work, games, education, clothing, behavior, and food using the backdrop of Sotterley Plantation's outbuildings and gardens. Students compare the lives of these children to their own experiences. Students complete a Colonial craft to take home.

Do you offer additional types of programming for Pre-K through 1st grade students?
Exploration Fridays
Butterfly Week in the summer
Homeschool Day
Spring Break

Do you have any self-guided field trip options?
No, but there are general self-guided tours that included map, brochures, audio tour, building access.

Visit date
06/26/2018

Program observed
Butterfly Week

Program type
One of a recurring series

How do you evaluate success in your fieldtrip program?
Send them a follow up survey.

How are fieldtrips staffed?

Staff instructors work about 6 hours per week. Many are retired teachers.

"Past teaching experience is preferred, and educators must be able to work well with students of all ages and easily traverse Sotterley's landscape. Educators are paid a stipend for each day worked."

They are cross-trained on multiple stations. Each receives a lesson plan, observes instructors in action, and is observed themselves. This is in addition to annual museum staff training.

What is the maximum group size you accommodate?
60 students, but 120 if teachers won't agree to come on separate days.
Scheduling

20 minutes per rotation

Stations=

- School house (includes discussion of who is/is not allowed to attend)
- Kitchen/laundry
- Garden (make a sweets bag)
- Games

What activities work well/don't work well for this age group?

Hands-on experiences are best
Parent photo opportunities

Sitting still
Focusing for long periods of time

Are your field trips aligned to standards?
Yes, but I couldn't locate them.

Any special safety concerns to be aware of?

They only cancel a field trip only if the school district closes. (Like for a tornado.)
They have a rain plan- lots of porches.

Do you require or offer any type of parent/teacher training? What type?
No

Special notes

Toileting can be an issue, with this age group in particular.

Tips

- Make sure to note if a program is self-guided in marketing materials. That way adults can be prepared.
- Keep younger students moving.
- Provide pre-trip materials such as vocabulary.
- If chaperones are leading activities, provide step-by-step instructions

Organization
Historic St. Mary's City

Type
History museum

Location
18559 Hogaboom Ln, St Mary's City, MD 20686

Contact person
Sharol Yeatman

Their position
Public Programs Coordinator

Their email address
sharoly@digshistory.org

What is your organization's mission?
To research and educate about Maryland heritage and history.

What guided field trip programming do you offer for Pre-K through 1st grade students?

$7 per student, 1 free chaperone per 10 kids ($10)

Puss in Boots – Tag along with Puss, the cat, as he adventures through the Plantation! Learn colonial objects and vocabulary as Puss gains wealth and power for his master. Pre-School – K Programs (one hour)

Based on a fairy tale. Incorporates a tour, acting, imagination. Story is a vehicle for interacting with the past. Based on literacy

Past and Present – Increase vocabulary and sort common household objects into a simple timeline of past and present. This tour helps children learn how things change over time. Pre-School – K Programs (one hour)

Coming to America: Now and Then – Pack your backs and travel back in time as an early American colonist. Assume the character of an actual 17th-century immigrant. Use primary documents and objects to discover the challenges and opportunities immigrants encountered then and now. Pre-K – 2nd Grade Programs (two hours)

Do you offer additional types of programming for Pre-K through 1st grade students?

Yes. Outreach programs and drop-in programs.

Mother Goose: Rhyme Time (one hour) – Favorite nursery rhymes come to life during this interactive and memorable adventure. Meet Mother Goose at the museum or in your classroom.

Meet an Early Marylander (one hour) – During the winter (Dec. through Feb.), invite our colonists to visit you! Hear about colonial life, examine reproduction items, and try on colonial clothes. The visit will wind up with a question and answer session.

Native American Life (one hour) – This program is available during the winter (Dec. through Feb.). Explore Native American lifeways in your classroom. Examine reproduction items, try on Native American clothing, and learn about the unique relationship that the native peoples of the Chesapeake had with their environment. This session will end with question and answers.

"Little Explorers: P is for Peas, What's Growing?, What's Bugging You?, Fall Mixed Up, We Are Going on a Bear Hunt, Harvest Time, Summer Time, What's the Weather?
Designed for pre-school age children 3-5 years old and an accompanying adult. $4 per child ($3 Friends members); one accompanying adult free. Full-day admission included."

Do you have any self-guided field trip options?

Yes. But they are rare, and HSMC provides nothing for them.

We recommend that you register for a guided program in order to get the most out of your visit; however, if you prefer, you may elect to participate on a self-guided basis. Classroom teachers are responsible for leading the self-guided tour. provide nothing.)

There is a per student self-guided tour fee for school groups. One adult per 10 students visit free; all others pay regular admission. A minimum of 15 paid students is required to receive the self-guided rate. Bus drivers receive complimentary admission.

Visit date
06.06.2018

Program observed
Little Explorers

Program type
One of a recurring series

How are fieldtrips staffed?
Staff with support from interns

Scheduling
A 30-minute lunch period is built into your tour. Picnic tables are located throughout the grounds; a limited number are sheltered. Location of lunch is dependent on individual group's tour schedule. In inclement weather, groups may need to eat lunch on their buses.

Developmental considerations for this age group?

Important to practice soft skills like sharing, taking turns, increasing attention span.
Allow time for them used to the space.
Establish trust with them.

What activities work well/don't work well for this age group?

Activities=
Sensory bings- water, shells
Water play and water beads
Sidewalk chalk for fine motor
Scooping for fine motor- rice bin
Pool noodle coin stacking for fine motor
Inflatable beach balls for gross motor
Corn hole for gross motor
Story time- books with few words
Pretend
Parachute game
Dress up (Simple smocks with Velcro can be imagined to be anything. Never use hats because of lice.)
Animal hides to touch
Musical instruments
Cooking with tools- wooden spoons, dipping gourds, cast iron pots, baskets, strainers
Bamboo and feather arrows
Canoe to climb in

Styles=
Incorporate hand motions, gestures, and sounds
Incorporating movement, hands-on activities, free play
Get down on their level.

Topics=
Seasons
Wild animals- turkey, ducks, geese, deer, rabbits
Bugs

Are your field trips aligned to standards?
No

Any special safety concerns to be aware of?
Always purchase non-toxic materials
Provide some shade from sun
Sunscreen
Drinking water
Insects
Walking distance

Do you require or offer any type of parent/teacher training? What type?
No

Special notes

School tour information sheet

- Timelines
- Arrival
- Cancellations
- Payment
- GPS/Mailing address
- Vehicle use
- Accessibility
- Dining
- Weather
- St. John's Site museum
- Museum store
- What to expect
- Going green
- Museum etiquette

Field trip planner

- Preparation
    - Trip planner
    - Directions
    - Letter for chaperones
    - School programs brochure
    - School tour information
- Background
- Activities for students
- Online activities

Developing audio tours or incorporating interactive maps to be accessed via tablets might be options for self-guided tours.

They use social narratives?

Tips

- For most children, this may be their first museum experience so they want it to be positive.
- With the younger students, many parents attend the field trips.
- Their programs used to be more rigid, but now allow more flexibility.
- Schedule less and be more flexible. (That's when kids can self direct a bit & magic moments occur.)
- They rarely do crafts & are against precision/stressful/elaborate ones. Once in a while they'll do something nature-based, like fairy houses or nests, that decompose

Organization
Irvine Nature Center

Type
Environmental education

Location
11201 Garrison Forest Rd, Owings Mills, MD 21117

Contact person
Tara Lilley
Diana Roman

Their position
Environmental Education Program Coordinator
Manager of Public Programs/Naturalist

Their email address
lilleyt@explorenature.org
romand@explorenature.org

What is your organization's mission?
Our mission is to educate and inspire current and future generations to explore, respect and protect nature.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Animals and their Habitats
Meet some of the animals that call Maryland home. Students will identify the living spaces in the park as they explore the trails, wildlife and habitat needs of the forest, stream and meadow communities.

Native Americans
A hands-on exploration into the lives of some of Maryland's first residents. Students will investigate the everyday lives of the woodland Algonquian Natives and their use of natural resources.

Maple Sugaring February and March Only
Experience the making of maple syrup and maple sugar. Student will learn the history of maple sugaring, tree identification, along with tapping and collecting methods from the past to current day.

Predator and Prey
Students will study the interrelationships between predator and prey through close-up observation. We'll head outdoors to search for predators and their prey and observe special wildlife survival adaptations.
Creek to Stream to Bay

Delve into a tributary of the Chesapeake Bay watershed. Students will uncover the creatures that inhabit the stream and determine the quality of the water by analyzing what they find in the stream.

Insects and their Kin
Investigate the diverse realm of insects and pollinators. Students will hike to the meadow to observing hoppers, crawlers, stingers and fliers while learning why they are so important to our ecosystem.

Rocks Rock!
Practice identification techniques for rocks and minerals and learn how they affect our daily lives through hands-on stations. Students will get outside to explore the mining past of Oregon Ridge and the lasting effects of our actions.

Reptiles and Amphibians
Meet and differentiate reptiles and amphibians along with some of the other animals that inhabit the park. Students will spend time on the trails discovering where they live, what they eat, and how they protect themselves.

Do you offer additional types of programming for Pre-K through 1st grade students?
Preschool
Homeschool programs
Summer camps
Nature in the classroom
Forest Dreamers (forest kindergarten)

Do you have any self-guided field trip options?
No

Visit date
08.22.2018

Program observed
Tiny Chefs
Self-guided site tour

Program type
Summer camp

How are fieldtrips staffed?
Led by staff

What is expected of parents and teachers?
Behavior management

What is your supervision ratio?
10:1

What is the maximum group size you accommodate?
50 (minimum of 10)

Scheduling

Field trips are offered on Tuesdays, Wednesdays and Thursdays.

Programs start at 10am.
Pre-K programs are 1 hour long. ($75)
Other programs are 2 hours long. ($125)

What activities work well/don't work well for this age group?

Color matching (Fill the red bucket with red things.)

Find these 5 items on this trail. (Limited, clear instructions.)

4 year olds= independent and mimic adult jobs
6 year olds= teamwork, coordination, imagination

Are your field trips aligned to standards?
Yes

Any special safety concerns to be aware of?
Regarding their Outdoor Classroom:
It is a classroom, not playground, so the focus is on learning not just play.
They follow many Certified Playground Safety Inspector (CPSI) policies.
They follow many American Society for Test and Materials (ASTM) standards.
They are a certified *Nature Explore Classroom*, and follow their safety standards.
Minimum twice monthly safety checks.
Incorporated specific site-lines to enable supervision.

Do you require or offer any type of parent/teacher training? What type?
No.

Special notes

Visitor Center has a nice laminated map, which gets returned when guests are done.

Pre/post field trip activity suggestions

Excellent Outdoor Classroom
Water play, spilling, pouring, making rivers, sand play, digging area, digging in fallen logs
Stump seating, rock "stream" bed, sunken feed trough, mud kitchen. dented pots and pans

Organization
Jefferson Patterson Park & Museum (JPPM)

Type
History museum

Location
10515 Mackall Road, St. Leonard, MD 20685

Contact person
Julie Hall

Their position
Director of Education

Their email address
julie.hall@maryland.gov

What is your organization's mission?
Jefferson Patterson Park and Museum connects people to the past through history and archaeology and supports the preservation of Maryland's cultural resources.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Colonial Lifeways
The Europeans that settled in the Chesapeake Bay region during the 17th century had to learn many new skills to survive. Explore how 17th century Maryland colonists adapted to their new home. Students begin by examining historical drawings, artifacts, and replicas. In addition they will grind corn using a wooden mortar and pestle, learn how to start a fire using flint and steel, and make a cedar shingle using a beadle and froe.
Pre-K through 5th grade; Max 30 participants; 1-2 hours.

Time Traveling Kids Aug 14 10-11am, This free program for Pre-K kids features stories that transport participants into the past! In addition to reading a story, participants will join in on activities related to the story's telling.

Chespax
Chespax is an environmental education program designed for grades K through 7 in Calvert County Public Schools. JPPM offers Discovering Archaeology to sixth grade students, as part of their Chespax experience.

Do you offer additional types of programming for Pre-K through 1st grade students?
Kids Story Time
Traveling trunk program
Summer camp

Do you have any self-guided field trip options?
No.

Visit date
07.19.2918

Program observed
Head Start preschool program

Program type
One-off program

How are fieldtrips staffed?
Led by staff

Developmental considerations for this age group?
Incorporating movement is very important.
Incorporate senses, especially tactile.
Short stories, less than 15 minutes.
Pretend
Guessing the purpose of tools

What activities work well/don't work well for this age group?
It can be challenging to find age-appropriate books for this age group.
Make and take activities

Are your field trips aligned to standards?
No. Not young elementary students, although they are for older elementary students.

Do you require or offer any type of parent/teacher training? What type?
No.

Special notes

"Where nature and history surround you."

Alternative ways to access them=
Audio tour accessible online or by phone
(Walking in their Footsteps: A Patuxent Community)
Virtual field trip option
Video podcasts accessible online

Organization
Jug Bay Wetlands Sanctuary

Type
Environmental education

Location
1361 Wrighton Road, Lothian, MD 20711

Contact person
Liana Vitali

Their position
Naturalist & Education Coordinator

Their email address
rpvita23@aacounty.org

What is your organization's mission?
Our mission is to increase awareness, understanding, and appreciation of estuarine and other natural ecosystems and their conservation through outdoor education, research, stewardship, and volunteering.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Cost $3.00 per student; Minimum of 10 students or $30/visit. One adult (teacher or chaperone) is admitted free of charge for every 10 students. Additional chaperones are charged the same amount as the students. Bus drivers receive complimentary admission.

Adapt To The Habitat
Grades K - 3. Duration: 4 hours
Explore and compare three different habitats of the Sanctuary. Record the different plants and animals found in each one while discovering the adaptations that make them best suited for their "home". Learn how adaptations improve survival in the wild and investigate examples of humans mimicking nature to improve our lives as well.
Keywords: habitat, adaptation, diversity, survival
NGSS Alignment: K-LS1-1, 1-LS1-1, 2-LS4-1, 3-LS4-3

Life of the Forest
Grades K - 6. Duration: 1.5 hours
Hike the trails with a naturalist to learn about the diverse plant and animal life in the forest. We will investigate the layers of the forest through hands-on activities. We will dig in the soil, roll logs, match tree leaves, observe wildlife and learn the value of forests.
NGSS Alignment: K-ESS3-3, K-LS1-1, 4-LS1-1, 4-LS1-1

Do you offer additional types of programming for Pre-K through 1st grade students?
Preschool series
Forest preschool

Do you have any self-guided field trip options?

No. But they are currently working on this idea. When the naturalist-guided field trips are booked up, they offer to give a 2-hour teacher/chaperone training so that they are able run the field trip on their own.

Share the field trip agenda
Visit locations of activities
Review activities and supplies
First aid & safety

Self-guided field trips self-select for teachers who are up to the challenge.

Visit date
06.14.2018

Program observed
Preschool Nature Series

Program type
One of a recurring series

How do you evaluate success in your fieldtrip program?
Online survey.
Each survey participant will be entered into a semiannual raffle for an annual pass to Jug Bay Wetlands Sanctuary.

How are fieldtrips staffed?
Led by staff naturalists

What is the maximum group size you accommodate?
50, larger groups must come on multiple days

Scheduling

Programs are available in the fall (September-November) or spring (March-June).
Programs are offered on Tuesdays, Wednesdays, Thursdays, and Fridays between 9:00 am and 2:00 pm.

Programs are a 2 (minimum) to 4 (maximum) hours in total duration.

What activities work well/don't work well for this age group?
Slow trail walks that allow for opportunities to present themselves
Short stories

Are your field trips aligned to standards?
Yes

Do you require or offer any type of parent/teacher training? What type?
No.

Special notes

Nature play area= digging pit, submerged boat for climbing, logs for hopping, signage "Explore and play here"
Climbing and balancing areas are most popular.

Visitor Center filled with interactive exhibits

Organization
Maryland Historical Society

Type
History museum

Location
201 W Monument St, Baltimore, MD 21201

Contact person
Alex Lothstein

Their position
School Programs Coordinator

Their email address
Alothstein@mdhs.org

What is your organization's mission?
The mission of the Maryland Historical Society is to educate people of all ages about the rich history of Maryland, using the Society's collections, and to collect and preserve important objects, printed materials and images from prehistoric Maryland to the present day.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Life Then & Now (Grades K-2)
What was life like in Maryland long ago? Students will be introduced to some of the differences between our past and present by investigating how jobs have changed throughout Maryland's history. Students will look at the lives of farmers, teachers, and more! Maximum Students: 60. Cost: $3 per student, Length: 1.5 Hours

Candle Dipping (Optional Add-on program)

In today's world, we do not have to worry about lighting our house at night. All we have to do is flick a switch and the lights come on. Before electricity was common place though, people had to use candles to light their home. Each candle had to be hand made and many were hand-dipped. Throughout this program, students will hand-dip their own candles using beeswax. Students will be able to take the candles home and try out the old method of seeing in the dark.

This program includes use of the lunch room. Half the students will eat lunch for 30 minutes while the other half takes part in the program. The groups will then switch. Maximum Students: 30, Cost: $2, Added time to visit: 1 Hour

Quill and Ink Letter Writing (Optional Add-on program)

How did people contact each other before texts messages and emails? Students will be able to explore and experience the skill of writing a letter with a quill and ink. While trying their hand at writing letters with ink, students will also learn how letters were sent and folded without

envelopes. At the end of the program, the students will have a letter written in ink for them to take home!

This program includes use of the lunch room. Half the students will eat lunch for 30 minutes while the other half takes part in the program. The groups will then switch. Maximum Students: 60, Cost: $2 per student, Added time to visit: 1 Hour

Do you offer additional types of programming for Pre-K through 1st grade students?

Traveling trunk program

- password protected
- lesson plans
- activity suggestions
- worksheets
- audiovisuals

Scouting programs
Homeschool program
Outreach
Virtual field trips
Historical investigations portal

Do you have any self-guided field trip options?
No. Something exists for families. They are in the development phase of one for schools.

Visit date
08.22.2018

Program observed
Teacher Resource Open House

Program type
Professional development

How are fieldtrips staffed?
Led by staff

What is expected of parents and teachers?
Manage student behavior, facilitate learning, assist with toileting.

What is the maximum group size you accommodate?
60

Scheduling
Variable, 1.5- 2.5 hours, depending on activities chosen.

Field Trips at the Museum are offered Wednesdays and Fridays.

The Colonial Maryland Program includes a 30 minute break that can be used for lunch.

Developmental considerations for this age group?
Keep them moving

What activities work well/don't work well for this age group?
Learning through play and exploration
Activity-driven stations

Are your field trips aligned to standards?
Yes, but not explicitly stated online.

Do you require or offer any type of parent/teacher training? What type?
No.

Special notes

***
[He] "unfortunately cannot share any of our resources with other institutions."
***

Field trip guidelines

- Before your visit
- Arrival information
- Museum guidelines
- Late arrival and cancellation policy
- Parking and directions

Organization
Mount Vernon

Type
History museum

Location
3200 Mount Vernon Memorial Highway Mount Vernon, VA 22121

Contact person
Libby Jones

Their position
Historic trades

Their email address
ljones@mountvernon.org

What is your organization's mission?
The mission of the Mount Vernon Ladies' Association is to preserve, restore, and manage the estate of George Washington to the highest standards and to educate visitors and people throughout the world about the life and legacies of George Washington, so that his example of character and leadership will continue to inform and inspire future generations.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Student admission to Mount Vernon includes the opportunity to tour the iconic Mansion, historic area outbuildings, and the Donald W. Reynolds Museum and Education Center, as well as seasonal access to the Pioneer Farm and Distillery & Gristmill. Field trips for all grade levels can be enriched by adding one or more of the programs and tours listed below.

Colonial Days at Mount Vernon
Experience 18th-century plantation life through hands-on activities, demonstrations, and colonial games at the Pioneer Farm. Participants may also tour the Mansion, meet people from Washington's world, and take part in a special ceremony at Washington's tomb.
Program Times: 9:30 a.m. – 12 p.m.
Recommended Grade Levels: K-6
Program Length: Budget at least 2 hours
Cost: Included with admission. Advance registration is required.

Seed to Table
Students visit the Pioneer Farm to learn more about George Washington, the farmer. Through storytelling, hands-on activities, and discussion, students discover what crops Washington grew and why, meet an animal, and learn how simple tools were used to improve farming practices.
Program Dates: April 16 - June 8, 2018, weekdays only
Program Times: As early as 9:30 a.m., depending on group size
Recommended Grade Levels: K-2
Program Length: 45 minutes

Cost: $1.50 per participant plus admission

George Washington's Gristmill
Experience STEM curriculum in action! Explore how wheels, gears, and levers were used to produce cornmeal and flour at Washington's water-powered gristmill.
Program Dates: April 1 – October 31, annually
Program Times: Site opens at 10 a.m.
Recommended Grade Levels: K-6; tours of the distillery for older students available upon request
Program Length: 45 minutes
Cost: Included with admission, advance reservation is required.

Do you offer additional types of programming for Pre-K through 1st grade students?
Homeschool program
The Seed to Table program is also available as a video created by the Fairfax Network, Fairfax County Public Schools.

Do you have any self-guided field trip options?
Yes. Teachers are expected to lead their own tours. But there are always interpreters on site to interact with. There are also add-on tours and programs may be used to enrich the student experience.

Visit date
06.07.2018

Program observed
Seed to Table program

Program type
Summer school field trip

How are fieldtrips staffed?
Add-on tours and programs are staffed.
Self-guided tours are led by teachers, who may choose to interact with interpreters on site.

Scheduling
Variable

Developmental considerations for this age group?
They are ready for a snack and bathroom break as soon as they arrive.

Are your field trips aligned to standards?
No, at least not online that I could find.

Any special safety concerns to be aware of?
Even early elementary learners are expected to walk long distances on site.

Do you require or offer any type of parent/teacher training? What type?

No

Special notes

Extensive online resources available
Lesson plans online, searchable
Virtual tour online

Organization
Nanjemoy Creek Environmental Education Center

Type
Environmental education center/ Academic center

Location

Contact person
Tim Emhoff

Their position
Director

Their email address
temhoff@ccboe.com

What is your organization's mission?
To provide meaningful outdoor learning experiences which promote the development of a lifelong environmental ethic of stewardship in students.

What guided field trip programming do you offer for Pre-K through 1st grade students?
None

Do you offer additional types of programming for Pre-K through 1st grade students?
None

Do you have any self-guided field trip options?
No

Visit date
09/06/2018

Program observed
None. Conversation and tour with Tim. Also met with Laura and Jen.

Program type
5th grade watershed steward field experience; extended day trip
They also do outreach

How are fieldtrips staffed?
All are staff led, no volunteers/chaperones/teachers
Tim is the Environmental Education Resource Teacher, and has a teaching degree.
Several Education Assistants, without teaching degrees

Scheduling
Extended day program, 8am-6pm
Exact schedule available online

Are your field trips aligned to standards?
Yes

Special notes

Investigate the history of environmental education facilities in Maryland. Trend began in the 1980s, as part of the Chesapeake Bay Agreement.

Teacher Info Booklet
- Trip checklist/timeline
- Group information worksheet/ Group information form
- Teacher responsibilities during the trip
- Tentative schedule
- Green team responsibilities
- Name tag template
- Model of a watershed

Chaperone Booklet
- Chaperone responsibilities
- Student responsibilities

Great citizen science resources online

Organization
National Aquarium

Type
Aquarium

Location
501 East Pratt St, Baltimore, MD 21202

Contact person
Lauren Albright

Their position
School Programs Coordinator

Their email address
lalbright@aqua.org

What is your organization's mission?
Mission: to inspire conservation of the world's aquatic treasures.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Aqua Critters
Horseshoe crab, hermit crab, whelk—oh my! Touch and learn about the remarkable horseshoe crab that appears on Atlantic beaches each spring. What do a hermit crab and a whelk have in common? They live in the same shell, but at different times. Examine a live whelk and hermit crab, as well as artifacts from these animals.
Grades: Pre-K through 1
Program length: 20 minutes
Live animal: Yes
Days offered: Monday through Friday
Times offered: 10 am and 11:30 am Monday through Friday; 1 pm Tuesday through Thursday
Number of students: 10-50
Cost: $5 per person

Maryland Backyard
What kind of animals can you find right here in the state of Maryland? Take a trip into the Aquarium's backyard as we discover ravens, squirrels, opossums and deer. Listen as our friend Randy the Raccoon introduces us to these wild neighbors and help him solve the problems of his forest friends. Meet a real Maryland native and learn how to make a happy home for him, as well as examine artifacts from these animals.
Grades: Pre-K through 1
Program length: 30 minutes
Live animal: Yes
Days offered: Monday through Friday
Times offered: 10 am and 11:30 am Monday through Friday; 1 pm Tuesday through Thursday
Number of students: 10-50

Cost: $5 per person

Do you offer additional types of programming for Pre-K through 1st grade students?

Outreach programs- Chesapeake Bay, Ocean, Rain forest, Slither, Slide, Creep and Crawl
Book club that allows students to earn free tickets to the Aquarium.
Homeschool program

Do you have any self-guided field trip options?
Yes. Numerous resources online to prepare for and lead a self-guided visit.

Visit date
08.14.2018

Program observed
N/A

Program type
N/A

How do you evaluate success in your fieldtrip program?

Survey Monkey survey. Marketing sends out a link at the end of the month, which is not ideal. Ideally they'd send out a link weekly. This change may lead to an increase in the quantity of the feedback, because the trip will be more recent and perhaps easier to recall.

They survey includes both general and program-specific feedback.

How are fieldtrips staffed?
Lead by staff

What is expected of parents and teachers?
Manage student behavior and support learning

What is your supervision ratio?
1:5 for Pre-K and K
1:10 for 1st grade

What is the maximum group size you accommodate?
50, minimum 15 for Pre-K and K
125, minimum 15 for 1st grade

Scheduling
Variable. It depends on the type of activities selected.

Are your field trips aligned to standards?
Yes. It can be a challenge keeping them updated to reflect changes.

What barriers are there to field trips?
Marketing them is a challenge. The marketing department is a bottleneck, because Education is not their priority.

Do you require or offer any type of parent/teacher training? What type?

Yes. Required 1-hour teacher orientation training. Then free field trip admission.

- Information about animals at the Aquarium
- An insider's look at new exhibits
- Chaperone tips
- A review of your reservation
- Ideas for pre- and post-visit activities
- Free curriculum materials

5 expectations for all chaperones sheet

Cell phone app can be used during field trips.

Videos on YouTube

- Field trip guides for teachers
- Field trip guides for chaperones
- What to expect
- Building overview
    - Mission
    - History
    - Before your visit
    - Parking
    - Info to share with students
    - Restrooms
    - Eating/food
    - Where to find maps
    - Groups meet-up spots
    - Gift shop
    - Overview of map
        - Attractions
        - Footage of visitors engaging
        - Footage of animals

Special notes

Teacher's Curriculum Guide=

- Your field trip to the aquarium
- Notes to the teacher
- Field trip justification form
- Chaperone suggestions
- Teaching tips for chaperones
- Aquarium exhibit overview

Pre-trip planning packet

- Reservations
- Directions and parking
- Check-in information
- Classroom activities and scavenger hunts

Downloadable

- Teacher booklets
- Education fact sheets

Scavenger hunt

Pre & post activities

Parent letter (bilingual)

- What your child will see and do
- Engage your child before the trip
- What to ask your child after the trip
- Family time
- Conservation home assessment
- Take action
- Craft together
- Books the whole family can enjoy
- Helpful websites

Hints for future visits

Organization
Oxon Hill Farm (NPS)

Type
Farm

Location
6411 Oxon Hill Road, Oxon Hill, MD 20745

Contact person
Ranger Stephanie

Their position
Park Ranger

Their email address
N/A

What is your organization's mission?
To protect its natural and cultural resources from the threat of increased urban development, and to continue to tell the story of the land and how it has changed overtime.

Visit date
06.12.2018

Program observed
Meet the Dairy Cow, Chicken & Egg

Program type
Drop-in program

How are fieldtrips staffed?
Led by park rangers

What is your supervision ratio?
1:7

What is the maximum group size you accommodate?

Scheduling
Most groups spend a little time on their own doing a self-guided tour of the farm or a hike on one of our trails, either before or after their scheduled program. There is no playground but we have an open field where children can run and play.

What activities work well/don't work well for this age group?
Photo opportunities for parents
Farm animals
Sensory activities

Special notes

Went without an appointment.

It was difficult to find the information I was seeking.

Organization
Schmidt Outdoor Education Center (Camp Schmidt)

Type
Environmental education center/ Academic center

Location
18501 Aquasco Rd., Brandywine, MD 20613

Contact person
Leslie Marcus

Their position
Environmental Literacy Outreach Educator, First Grade Program

Their email address
leslie.marcus@pgcps.org

What is your organization's mission?
An academic center that provides students with a meaningful outdoor experience that enhances as well as reinforces skills learned in the classroom.

What guided field trip programming do you offer for Pre-K through 1st grade students?

First grade program has 5 rotations.

Amazing Animals= Bio Facts, Track matching, Print making, Scat droppings, Deer antler, Tag game

Feathery Friends= *Binoculars, Card matching game, Bird beak game*

Pollinators= Garden tour guide & map, Magnifying glasses available, Tag game

Super Soils= Kinds of soil, What kind of soil?, Magnifying glasses, Vermiculture bin

Tree Detectives= Tree blind fold game, Tree ID pail, Tree age, Tree rings

Supply box stays in woods= lesson guide, all materials, more activities.

Do you offer additional types of programming for Pre-K through 1st grade students?
No

Do you have any self-guided field trip options?
No

Visit date
06.13.2018
08.29.2018

Program observed
Conversation and site tour
Professional development training

Program type
First grade field trip

How do you evaluate success in your fieldtrip program?
Survey Monkey

How are fieldtrips staffed?
Teachers and chaperones. One staff person oversees it all, and can substitute if needed.
School personnel such as nurses, aides, etc may also chaperone.

What is expected of parents and teachers?
Receive on-site training, review the activity lesson plans online, review the lesson videos online, lead the activities on site.

What is your supervision ratio?
Minimum of 1:10 for elementary age, ideally more like 1:7.

What is the maximum group size you accommodate?
50-60 students desirable, up to 90 on occasion

Scheduling

8:00-10:00am Students arrive
1:00-3:00pm Students depart

Rotations are 30-40 minutes long
Lunch is 30 minutes

2 activities
lunch
3 activities
(timing depends on when they arrive/start)

Are your field trips aligned to standards?
Yes- CCSS, MD state standards, E-literacy standards, NGSS, and book chapters.

Any special safety concerns to be aware of?

Staff are First Aid/CPR/Epi-pen certified.

Remind them that there isn't a nurse on site, like they have at school.

Show them picture of poison ivy.

No running.

What barriers are there to field trips?

Lack of chaperones to facilitate the program.

Background check and fingerprinting required for chaperones.

What furtherances are there to field trips?
Cumpulsatory for school system
Price is free
One free bus
Free scheduling of the bus

Do you require or offer any type of parent/teacher training? What type?

Yes. Teachers are required to attend a 3-hour, in-person, professional development training, for which they receive credit. Teachers then delegate to parent chaperones and instruct them to review the activity lesson plans and lesson videos online. These adults will lead the activities on site.

Activity lesson plans and videos online.
http://pgcps.org/williamschmidt/PB-williamschmidt.aspx?pageid=220191&id=214853

Special notes

Field trip packet (bilingual)

- Permission slip
- Stream study permission slip
- Know before you go
- T-shirt order form
- Emergency medical treatment authorization form
- Field trip medication information
- Physician's medication authorization for prescription and nonprescription medication
- T-shirt form

Address potential guest fears directly. (dirt, germs, bees, snakes, ticks, etc.) The benefits of being outweigh risks if proper precautions are taken. We could address consequences of NOT being outside.

1st grade focuses on lifecycles

Tips

- Make the expectations clear to teachers. It is still a school day and a teaching day, even though it is a fieldtrip.
- Make the expectation clear to chaperones.
- Determine student groups ahead of time. (A/B/C/D/E)

Logistics

- Make sure they eat breakfast before trip
- Determine if lunches are needed from the cafeteria
- Get any medications from nurse

Sites Consulted

15. Brookside Gardens
16. Brookside Nature Center
17. Chesapeake Bay Maritime Museum
18. Cleveland Botanical Garden
19. Elms Environmental Education Center
20. Green Spring Gardens
21. Morton Arboretum
22. Robinson Nature Center
23. United States Botanic Garden (USBG)

Organization
Brookside Gardens

Type
Botanical garden

Location
1800 Glenallan Avenue, Wheaton, MD 20902

Contact person
Lynn Richard

Their position
Children's Program Horticulturist

Their email address
Lynn.richard@mncppc-mc.org

What is your organization's mission?
Botanical garden

What guided field trip programming do you offer for Pre-K through 1st grade students?

How Seeds Travel – Grade level: 1 Spring/Fall
Plants may not have feet, but they do move! Plants travel by dispersing seeds and fruit that fall on the ground and begin growing. In this program students will take a closer look at specific methods of seed dispersal and learn the value seeds hold in nature. They will learn how and why seeds travel, environmental conditions required for seeds to germinate, and how to care for a plant. Students will collect seeds and pot a plant to take home.

Sunflower Sally – Grade level: 1 – Fall
Come meet Sunflower Sally! Sally, our flower friend introduces students to plant parts and their functions. We will take a journey through the gardens and make observations of plant features, discuss how plants survive, compare plants in different habitats, and make a collection of natural resources. Students will pot a plant to take home.

Do you have any self-guided field trip options?

Yes. A backpack program that is not very popular, and Wings of Fancy Live Butterfly & Caterpillar Exhibit that is very successful. She really wants to improve their backpack program. Keep her in the loop with what I discover.

Backpack has 4 potential activities- Story Time, Color Match, Bug Exploration, and Nature's Treasure Walk. Not many groups take advantage of it. Perhaps it is not marketed well, or teachers just want to have a relaxing time. It was originally developed because they didn't have enough staff for that age group. It has existed for 3 years. It is not well embraced even though activities are age-appropriate and engaging.

Visit date
07.25.2018 phone call

Program observed
N/A

Program type
N/A

How are fieldtrips staffed?
Led by staff

Scheduling
Students will enjoy a 30-minute interactive presentation, 15-minute hands-on activity, and a 45-minute outdoor exploration of Brookside Gardens and the Conservatory Greenhouse.

Developmental considerations for this age group?
Very short attention span

What activities work well/don't work well for this age group?
Incorporate props
Sensory items
Hands-on

Special notes

Marketing of field trips is a challenge. It's mostly done in-house because central marketing is spread thin.

Tips=

- Keep it really simple
- Develop 1 or 2 things to try
- Very important to articulate standards

Organization
Brookside Nature Center

Type
Nature center

Location
1400 Glenallan Ave, Wheaton, MD 20902

Contact person
(Pri)Scilla Taylor

Their position
Program & Facility Manager

Their email address
priscilla.taylor@montgomeryparks.org

What is your organization's mission?
Our goal is to excite students through experiential education programs, developing along the way a sense of responsibility towards our natural and historical resources.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Environmental Science & Cultural Programs

Seasons and Senses: On a hike to different habitats, students learn what makes weather and interpret different elements of weather like sun, wind, precipitation and clouds and discover how weather affects plants, animals, people and the landscape we live in. Recommended for PreK- K. Offered September – December and March – June.

Exploring Living Things: Habitats All living creatures need food, water, shelter, and space. Students will investigate the four elements of a good habitat. Find out how human beings affect and are affected by natural habitats. Learn what we can do to protect the 'homes' of our wildlife neighbors. Explore several outdoor habitats and look for signs of the animals that live there. Recommended for Pre-K – 1. Offered September – October and April – June.

Adaptations and Survival: Students will be introduced to the animals who live in the local habitats to learn about their adaptations allowing them to survive. Teachers can choose to focus on:
Insects (Recommended for Grades 1-3)
Vertebrates (Recommended for Grades 1 & up)
Offered September – October and May – June.

Pond & Stream: What's a pond? What's a stream? And, who lives there? This program introduces younger students to aquatic habitats. Recommended for Grades K-2. Offered September-October and May-June.

Apple Cider Pressing: Join us as we put the squeeze on some apples! Learn the history of apples in America. Discover the art of cider making and try a taste of this traditional American drink. This program offered in October only.

Maple Sugaring: How did people learn how to make Maple Syrup? Students will be taken through the sweet process from photosynthesis to tasting real maple syrup. It is a true American Tradition! This program offered the last week of January through the end of February only.

Brookside Nature Center School Programs are free for curriculum-based environmental education programs to all Montgomery County schools: public, independent, and home-schools (grades K through 12). Fees for all other groups will be $6 per participant.

Do you offer additional types of programming for Pre-K through 1st grade students?
Summer camp

Do you have any self-guided field trip options?
No.

Visit date
07.25.2018, Phone call

Program observed
N/A

Program type
N/A

Scheduling

Tuesday-Friday from 9 a.m. to 5 p.m.

Varies from 1 to 3 hours, depending on program, curriculum, and age group.

Special notes

Tips

- Program success depends largely on it's marketing.

Nature Play area

- Experimental in nature on how they use the space
- Birds nest rotted away (ephemeral)
- Sand pit and pebble pit* are the most popular
- Wood cookies
- Labyrinth or spiral
- Rock pile
- Structure not constructed for climbing, so that’s an issue
- 7x5 rectangle of slate, 1x1 slates, for teachers to do math

“Our goal is to excite students through experiential education programs, developing along the way a sense of responsibility towards our natural and historical resources.”

Organization
Chesapeake Bay Maritime Museum

Type
History museum

Location
213 N Talbot St. Saint Michaels, MD 21663

Contact person
Jill Ferris

Their position
Education Director

Their email address
jferris@cbmm.org

What is your organization's mission?
The Chesapeake Bay Maritime Museum is dedicated to preserving and exploring the history, environment, and culture of the entire Chesapeake Bay region, and making this resource available to all.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Chesapeake's Best Crab Cakes Immersive Tour
Grades: K-5, Duration: 1.5 hours, 60 students/chaperones max
In this NEW immersive tour, students learn about Chesapeake geography, biology, and economics by following the blue crab on its journey from the brackish Bay to our picnic tables. The program focuses on the people who earn their livelihood from the crabbing industry. Students have a chance to walk in their shoes by working a trotline activity, picking stuffed crabs at a packing house, ordering from a restaurant on a migrant worker's wages, and culling their dredge catch.

Bay Bounty Guided Tour
Grades: K-12, Duration: 1.5 hours, 60 students/chaperones max
In this guided science–and history–based program, students learn what it means to "follow the water" in every season on the Chesapeake through the eyes of a waterman. Students will tong for oysters, pull crab pots, climb into an oysterman's bunk on a skipjack, and hear stories of the "big guns" commercial hunters used at the turn of the 19th century.

Do you offer additional types of programming for Pre-K through 1st grade students?
Summer camp

Winter STEAM team

Family Activity Backpacks (not designed for school groups, works well for families)

Families with young children can use an activity backpack to facilitate museum exploration. Designed for children 3-6 years old, activities in the backpacks include games, puzzles, and props to encourage play and hands-on exploration within several of the museum's exhibits, including the 1879 Hooper Strait Lighthouse. The backpacks can be reserved at CBMM's Welcome Center during a visit, and are offered free with the museum's general two-day admission.
(Includes activities, props, tools, inventory list)
(Imagination Bag, Flat Crabby Photo shoot, Boatyard I Spy, Lighthouse Object Hunt, Lighthouse I Spay, Boat Drawing Challenge)

Campus Challenge= Snap It, Find It, Answer It, Do It, Sketch
(Intentionally broad, focused on doing things)

Preschool Scavenger Hunt= In the Boat Yard, At the Lighthouse, In At Play on the Bay
(Parent guides suggest what to do, adult records for non-writers)

Do you have any self-guided field trip options?

Self-Guided Tours
Grades: K-12, Duration: 1.5 hours, 100 students/chaperones max
In addition to our guided tours, we offer the option of self-guided tours by reservation. Maps and supplemental activities to complement our self-guided tours are available by request. CBMM school tours run continuously throughout the year, and we welcome all students, whether from public, private, or home schools.

Several pre-schools within walking distance
Staff are familiar with what there is to do, and come do it own their own

Visit date
08.01.2018, Phone conversation

Program observed
N/A

Program type
N/A

How do you evaluate success in your fieldtrip program?
Don't know about field trips but…
Family Activity Backpacks have a simplified smiley face survey that is part of the check-out process. The summer intern is responsible for this. The program has existed for 6 years.

How are fieldtrips staffed?
Led by staff

What is your supervision ratio?
1:10

Developmental considerations for this age group?
Very short attention span
Play is very important

What activities work well/don't work well for this age group?
Focus for K and 1st grade is on play
Scavenger hunt (pictoral)
Bingo
Role-playing
Making things
Doing jobs

Any special safety concerns to be aware of?
Bussing can be tricky for pre-school kids because some of them still need car seats.

Special notes

Family Learning Map identifies child-friendly places on campus= Boat to explore, Boat rides, Take a closer look, Hand-on learning

Green Maps in Baltimore has good icons for maps

Designed in a "please touch" manner

Expect to undergo many iterations of a program during it's development

Tips
- Create a learning menu
- 5 basic stations
- Keep it broad
- Teachers can adapt it (scale it up or down) to match their needs
- Don't make it too content heavy
- Keep it broad and vague

Balance
- Some groups will love it and others will hate it
- Don't stress
- Try something and be willing to experiment
- Take small steps
- Their scavenger hunt is in it's 3rd or 4th iteration

Pre-visit materials, curriculum units, and related videos
"Do you need support prior to your trip to prepare your students for academic success?" on reservation form

Organization
Cleveland Botanical Garden

Type
Botanical garden

Location
11030 East Boulevard, Cleveland, OH 44106

Contact person
Kathryn Clusman

Their position
Former Children's Garden Manger

Their email address
Kclusman@rockhall.org

What is your organization's mission?
Advance and inspire a deeper understanding of plants to enhance life.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Garden Variety Tour - All Grade Levels
Come experience a little bit of everything on a Garden Variety Tour. Lead by a school group guide, you will visit the glasshouses, outdoor gardens, and any current special exhibits. Duration – 1 hour

Sensory Tour - K-Grade 6 (March- October only)
Experience the outdoor gardens using all five of your senses. Students will see beautiful gardens, smell fresh blooms, touch fuzzy leaves, hear buzzing insects, and even taste fresh herbs. Duration – 1 hour

Is it Alive? – Pre-K-K
Students will develop a set of criteria for distinguishing between living and non-living things while exploring the unique ecosystems in our indoor glasshouses and/or outdoor gardens. Students will review the basic needs of living organisms and discover the importance of both living and non-living things within a habitat. Duration – 1 hour

Plant Exploration – Pre-K- Grade 1
Students will explore plants and their various parts as they move through sensory stations that include planting a seed to take home and observe. After, students will visit the Hershey Children's Garden (March-October) and/or the glasshouses to discover more about plants. Duration – 1 hour

Plants & Me - K-Grade 2
Discover the diverse ways in which people use plants in everyday life; from cotton for clothing to flour for bread. Then, plant a seed to take home that will grow in to a plant used for clothing,

food, or beauty. After, explore the Hershey Children's Garden (March-October) and/or the glasshouses to find examples of plants that people use. Duration – 1 hour

Butterflies in the Garden - K-Grade 2
Discover the wondrous life cycle of a butterfly and then observe each stage first-hand in the Costa Rica glasshouse. Duration – 1 hour

Do you offer additional types of programming for Pre-K through 1st grade students?

Do you have any self-guided field trip options?

Self-Guided Visit - All Grade Levels
A self-guided visit to the Cleveland Botanical Garden allows you to enjoy the Garden at your own pace, structure your visit around what your students are currently learning, as well as adhere to the unique learning style of your class. Group leaders and chaperones will be provided with maps and information on rules and special exhibits.

Not many chose this option, nor did it well. Even with guided maps and stops, teachers felt lost and confused. Perhaps it works better at zoos and museums because of the copious pictures and displays. Teachers and students are also more familiar with the content. Being outside is unfamiliar for some and they react accordingly. (students are wild and teachers overcorrect)

Visit date
10.03.2018, Email correspondence

Program observed
N/A

Program type
N/A

How are fieldtrips staffed?
Led by staff

Special notes

Tips
- Show how teachers can use the space
- Provide tools (measuring tape, magnifying glass, pictures)
- Provide prompts or conversation points

Organization
Elms Environmental Education Center

Type
Academic center

Location
49300 St. James Church Rd, Lexington Park, MD 20653

Contact person
Margarita Rochow

Their position
Environmental Educator

Their email address
mrrochow@smcps.org

What is your organization's mission?
To engage students and stakeholders in hands-on environmental investigations and inspire life-long stewardship of our natural resources beginning in our own backyard: the Chesapeake Bay Watershed.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Pre-K
Atlantic Blue Crab & Life in the Chesapeake Bay
Students will learn about the Atlantic Blue Crab and other life and of the Chesapeake Bay through observation, art, and exploration on the beach. $10

Kindergarten
What Living Things Need & Reusing Natural Resources
Through activities and observation, students will learn about what all living things need to survive in their unique environments. Students will explore how plants and animals use and reuse natural resources, and discuss how humans can reduce their impact on their environment while building sandcastles with reusable materials. $10

First Grade
Structure & Function of Plants & Animals
Students will investigate how plants and animals use different body parts to survive, grow, and meet their needs while hiking through various ecosystems, observing live animals, and playing games. Students will discover that individuals of the same kind of plant or animal are similar, but not exactly the same. Students will create shelters for their "Mini-Me's" to better understand how human problems can be solved by mimicking how plants and/or animals use their external parts to help them meet their needs. $10

Do you offer additional types of programming for Pre-K through 1st grade students?
Outreach

Do you have any self-guided field trip options?
No. They attempted a self-guided program about 10 years ago for 5th grade.
It included materials and lesson plans. Teachers didn't feel competent, they didn't want to lead, they wanted a day "off." Current trend to use field trips as rewards.

Visit date
08.10.2018, Phone call

Program observed
N/A

Program type
N/A

How are fieldtrips staffed?
Led by staff and volunteers.
Most of our programs are taught by our seasonal part-time/hourly education staff.

What is expected of parents and teachers?
Chaperones are expected to serve as active program assistants and small group leaders. They assist in lessons and manage student behavior.

What is your supervision ratio?

Please bring no more than 4 actively engaged chaperones for each Pre-K through 5th and 7th grade class. Additional school staff (Para-educators, Special Education Teachers, Nurses, Principals etc.) needed to support student learning are always welcome in addition to the parent chaperones.

Scheduling

Pre-K
9:15am- 11:15am or 1:15am-3:15pm

K and 1st grade
9:15am- 2:15pm (8:45am- 1:45 for early schools)

Special notes

Preparing to be a Chaperone
Tips for Chaperones
(both from http://beetlesproject.org/)
Organization
Green Spring Gardens

Type
Botanical garden

Location
4603 Green Spring Rd, Alexandria, VA 22312

Contact person
Heidi Young

Their position
Children's Education Coordinator

Their email address
heidi.young@fairfaxcounty.gov

What is your organization's mission?
Unknown

What guided field trip programming do you offer for Pre-K through 1st grade students?

Green and Growing Garden is a nature program that integrates the Virginia Standards of Learning for preschool and kindergarten students (SOL: K.6, K.10, Oral Language K.1, K.2). The program begins with an introduction to the gardens followed by a rotation through the following three stations: Plant Life Cycle Station, Soil Station, Sensory Garden.
Discover the world of the garden. Learn about plants, explore seasonal changes and investigate living and non-living things in the soil. Use your senses to explore our gardens. Dig in the dirt and plant some seeds to take home, too.

Fantastic Flora and Fauna is a nature program that integrates the Virginia Standards of Learning (Science SOL 1.4, 1.5, 1.7, 1.8) for first-grade students. The program begins with a Native American tale in a story circle in the Horticulture Center, then moves outdoors for the following three-station rotation: Flora Station, Fauna Station, Forest Walk Station.
Share an American Indian tale in our story circle. Learn about flowering plants and edible plant parts then play a fun game! Touch turtle shells and deer antlers as we look at animal characteristics in our interactive animal station. Explore trees and their seasonal changes in our woodland trail hike.

$9/person Fairfax County schools
$10/person Out-of-County schools
Fee applies to students and chaperones.

Do you offer additional types of programming for Pre-K through 1st grade students?
Summer camp
Scouting programs

Do you have any self-guided field trip options?
Yes. Please call ahead to schedule a visit so staff is better able to manage visitor traffic. A suggested donation of $3 per person for self-guided groups is appreciated.

Visit date
07.18.2018

Program observed
N/A

Program type
Self-guided tour

How do you evaluate success in your fieldtrip program?
Each teacher packet has a paper evaluation form. After the visit, an email goes out with the evaluation form attached. Their return rate is about 20%.

How are fieldtrips staffed?
They have three regular part-time teachers and 1-2 volunteers per week

What is your supervision ratio?
1:10. Maximum of 20 chaperones per field trip.

What is the maximum group size you accommodate?
Maximum number of students per day: 85

Scheduling

Programs run Tuesday-Fridays.

Pre-K & Kindergarten programs run from 10 a.m.-11:30 a.m.
First to fifth grade programs run 10 a.m.-noon.

Special notes
Field trip etiquette guidelines

Organization
Morton Arboretum

Type
Arboretum

Location
4100 Illinois Route 53, Lisle, IL 60532

Contact person
Meghan Wiesbrock

Their position
Manager of Curriculum and Instruction

Their email address
mwiesbrock@mortonarb.org

What is your organization's mission?
To collect and study trees, shrubs, and other plants from around the world, to display them across naturally beautiful landscapes for people to study and enjoy, and to learn how to grow them in ways that enhance our environment.

What guided field trip programming do you offer for Pre-K through 1st grade students?

One guided adventure (1.5 hours): $8 per student, $15 registration fee
One guided adventure (3.0 hours): $12 per student, $30 registration fee
Two guided adventures (3.0 hours): $12 per student, $30 registration fee
One guided adventure (1.5 hours) + Self-guided adventure: $12 per student, $30 registration fee

Trees In A Nutshell
Students ages 4-5
Hours: 1.25, Maximum students: 200
Nature detectives hit the trail to uncover the life cycle of trees through games, role play, and guided observation. Our discovery includes investigations into seeds, saplings, adult trees, and fallen logs. Connections are made between fallen logs and soil production to bring the amazing cycle full circle.
This program emphasizes the following NGSS Standard:
K-ESS3-1: Interdependence among plants, animals, and their environment.
This program emphasizes the following Illinois Learning Standards:
11A-1a: Observation
12A-1a: Component Parts of Living Things
12A-2a: Simple Life Cycles

Sensing Nature
Students ages 4-5
Hours: 1.25, Maximum students: 200

Animals, including humans, use more than their eyes to learn and survive in nature. In this hands-on, noses-on, eyes-on, and ears-on program, students discover how all five senses can be used to explore nature. Discover shapes and textures in nature and the various ways color and scent are used by trees.
This program emphasizes the following Illinois Learning Standards:
11A-1b: Scientific Questions
12B-1b: Interdependence / Survival
12E-1b: Seasonal Change

Leave No Child Inside
Students ages 4-5
Hours: 1.25, Maximum students: 200
A growing body of research is telling us that unstructured time spent outdoors in nature is critical to children's physical, social, and emotional development. Such outdoor experiences can foster creativity, emotional well-being, independent learning, and problem solving. The beauty of the Arboretum changes daily, and your students will have an opportunity to explore whatever is most interesting on the day of your visit. One of our guides will be on hand to answer questions and guide students to exciting questions and observations, but the focus is on free exploration of nature.
This program is not meant to address any specific Illinois Learning Standards.

It's Fall! (1st grade)
1.5 hours, 180 students maximum
Explore seeds and leaves of trees to discover how nature prepares for winter. Use your senses to experience the life in the Arboretum and learn about how plants and animals adapt to the seasons. Observe nature in autumn up-closer as we learn about fall, color, seeds, and animals.
This program emphasizes the following Illinois Standards:
11A-1a: Observation
12A-1b: Observable Features of Living Organisms
12B-1b: Interdependence/Survival

Bugs Abound (1st grade)
1.5 hours, 200 students maximum
Get up close and personal with insects and other invertebrates. Students use active inquiry to explore the component parts and life cycles of bugs and butterflies. Sweep the fields to discover the diversity of bugs in this region, find out how bugs move, locate and compare habitats and diets, and observe interesting characteristics.
This program emphasizes the following NGSS Standards:
1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
1-LS1-2: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
This program emphasizes the following Illinois Learning Standards: :
11A-1b: Scientific Questions
12A-1a: Component Parts of Living Things
12A-2a: Simple Life Cycles

12B-1a: Invertebrate Characteristics

Do you offer additional types of programming for Pre-K through 1st grade students?

Many family programs (with a parent)
Scout programs
Outreach
Summer camp
Lending trunks

Do you have any self-guided field trip options?

Self-guided adventure: $6 per student, $15 registration fee

The Children's Garden
This is an enclosed 4-acre garden designed to spark curiosity about trees and the natural world as children play. The Children's Garden is a self-guided option for students grades K through 3rd grade only. (Maximum: 400 students)

Vanishing Acts: Trees Under Threat (Pre-K)
Time is running out for more than 8,000 tree species. Yet, few people know of their plight. All over the world, forces threaten wild tree species. Explore this new outdoor exhibit and offer your students a timely and compelling look at endangered trees, reasons to care about this pressing global issue, an inspiring view of how trees enrich our lives and simple actions for environmental stewardship. The exhibit is located in the Conifer Collection on the east side of The Morton Arboretum.

Woodlands, Wetlands, and Prairies (Pre-K)
Make discoveries on your own while exploring the Arboretum's woodlands, wetlands, and prairies (no support materials provided). Below are some suggested itineraries that take up to approximately 90 minutes. These options may include interpretive trail signs. (Maximum: 200 students)

East Side: Starting at parking lot #8 walk the "Joined Loops 3 & 4 Trail" to Big Rock Visitor Station. Continue on the Woodland Trail to Big Rock. For a longer experience, walk the long way around the Heritage Trail back to the Big Rock Visitor Station.

West Side: Starting at the Prairie Visitor Station (parking lot #25) walk the Prairie Trail loop and go to parking lot #30. For a longer experience, walk to the nearby Millennium Oak.

Explorer Backpacks
Registered school groups grades Pre-K – 3 can also reserve explorer backpacks to enhance their educational experience. Register one pack for every 10 students. (Backpacks are limited for groups of 200 or less).
Arboretum Adventures, Awesome Insects, Fun-tastic Fall, Hidden Habitats, Sings of Spring

Visit date
08.03.2018, Phone call

Program observed

N/A

Program type
N/A

How do you evaluate success in your fieldtrip program?
Survey Monkey focused on content

How are fieldtrips staffed?
Led by staff

What is your supervision ratio?
3:20

What is the maximum group size you accommodate?
200

Scheduling

Duration: 1.5 hours (Pre-K and Kindergarten programs are 1.25 hours)

Morning programs are scheduled Monday-Friday, 9:45-11:00 a.m.
Afternoon programs are scheduled Monday-Friday, 11:45 a.m.-1:00 p.m.

What activities work well/don't work well for this age group?
Magnifying glasses
Seek & Find activities
Clear and simple instructions-"Find something red, Touch something smooth"
Lifecycle is important (frog figurines)

Are your field trips aligned to standards?
Yes. Even self-guided field trips have the potential to address certain standards.
There is one guided field, Leave No Child Inside," trip that is not meant to address specific standards.

What barriers are there to field trips?
Science concepts can be intimidating
Customers have other local options

Do you require or offer any type of parent/teacher training? What type?
No.

Special notes

Guided field trips, "this program emphasizes the follow xyz standard."
"This program is not meant to address any specific…standards."

Self-guided field trips "have the potential to address" listed standards
-have teacher resources available to download
-suggested itineraries with times

"Not all classrooms have walls."

Tools-

- Plan your field trip
    - Video
    - Policies and procedures
    - Chaperone information (bilingual)
    - Onsite map
    - Vocabulary and activities
    - Online exhibits (Google Cultural Institute)
        - Can you image a world without trees
        - What is an arboretum
        - Great trees

Things that have positioned them to be successful=

- Aligned to standards
- Supplemental resources (pre/post)
- Provide field trip planning tools
    - Letter for parents
    - Letter for chaperones
    - Checklist of what to do leading up to the visit
        - 4/3/2 weeks prior
        - They week/day before
- Translated some documents into Spanish

Marketing=

- Promoting their field trips to school administrators as the gatekeepers
  (They've had much success targeting them directly.)
- E-brochure to schools in "e-backpack"
- School outreach events (PTA, science nights)
- Regional office of education has a list they mine for information
- Teacher testimonials
- "Teacher Tuesday" during the summer.
    - Don't have an Open House event like many others
    - Free for teachers
    - Creates traffic jams for rest of staff because so many teachers come!
    - Some sites offer this to teachers year round
      (Come and get familiar before you visit)
    - Gets people on the property, more likely to come back, bring more people in the car & only the teacher is free

SELF-GUIDED is most successful for the littles

- Exploration-based

    - "Go find _____"
    - Tools they can use, but not instructed how to use them
    - Maybe they're never used a magnifying glass before!
    - Some teachers are not at all comfortable with science
- Open-ended
    - Tool
    - Choice
    - Options
    - Engaged looking for something
- Include a book or resource
    - Adults are more comfortable reading to students
    - Stories are easy and age appropriate
    - Difficulty can be finding the right book

Field trip group planning template
Chaperone information letter (bilingual)
(good info on how to help students enjoy their visit)

Organization
Robinson Nature Center

Type
Nature center

Location
6692 Cedar Lane, Columbia, MD 21044

Contact person
Kevin Costin

Their position
Rental & Field Trip Coordinator

Their email address
Rental & Field Trip Coordinator

What is your organization's mission?
Our mission is to facilitate the enjoyment and understanding of our natural resources and to bridge the gap between people and nature.

What guided field trip programming do you offer for Pre-K through 1st grade students?

All field trips include admission to the nature center, a naturalist-led program that meets Next Generation Science Standards (NGSS), and time for students to explore the nature center's Discovery Room, Nature Place and exhibits. Please note, this exploration time is self-guided. Chaperones are responsible for students during this time.

Sensory-Friendly Field Trips; Environmental/Historic Field Trips; Astronomy Field Trips

Sensory-Friendly Nature Study
All ages / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
This program allows students that benefit from sensory-friendly accommodations to explore nature and make new discoveries in a way that best meets their needs. Music, hands-on activities, and movement are integrated as we traverse trails, learn about plants and animals, and search for signs of wildlife. Imaginations will run wild as we immerse ourselves in the natural world!

Nature Now
4 years + / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
Curious about what's going on in nature right now? This exciting program highlights the special, ever-changing events happening seasonally in nature and on our trails. Explore the fascinating habits of wildlife – whether they are migrating, hibernating or fighting for territory and survival. Take a closer look at the remarkable changes plants undergo – from spreading their seeds, to blooming and attracting pollinators, to dropping their leaves. Programs are interactive and tailored to the age group of your choice. From preschoolers to adults, come discover the magic behind nature's seasonal transformations!
NGSS Standard: 3-ESS2-1

Discover Nature
Grades Pre-K-1 / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
Expose your students to a variety of sights, smells and sounds in this fun-filled program. Through exploration of animal mounts, fur, skulls and shells, get an up-close experience with nature. Explore what plants and animals need to survive, and the relationship between their needs and where they live. Head out to the trail to discover the mysteries of our environment.
HCPSS Recommended Field Experience: Kindergarten, Quarter 4 NGSS Standards: K-LS1-1, K-ESS3-1, K-ESS3-3

Wildlife Wonders
Grades K-4 / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
Animals fascinate children. From foxes and finches to frogs and fish, introduce your students to common kinds of animals with an emphasis on the five vertebrate groups (birds, mammals, fish, reptiles and amphibians). Investigate the similarities and differences between animal groups through props and mounts. Older students further explore life cycles and gain an understanding of how young animals, particularly amphibians, can differ drastically in appearance from their parents. Search the trails for signs of each type of creature.
HCPSS Recommended Field Experience: 4th Grade, Quarter 4 NGSS Standard: 1-LS3-1

Happening Habitats
Grades 1-4 / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
Adaptations are everywhere, and there is no better way to investigate them than by examining the organisms found in different locations at the nature center. Discover how plants and animals have special features and types of coloration that allow them to survive in specific habitats. Compare manmade inventions to features found on plants and animals, and determine how both humans and other organisms use these features to meet their basic needs. Hike the trail passing various habitat types while examining furs, feathers, seeds and other objects that give clues to the survival of animals and plants that call each habitat “home.” HCPSS Recommended Field Experience: 1st Grade, Quarter 1; 2nd Grade, Quarter 4
NGSS Standards: 1-LS1-1, 2-LS4-1, 3-LS4-3, 3-LS4-4 and 4-LS1-1

Have Seeds, Will Travel
Grades 1-3 / 1 hr, 30 min / Year-round availability on W, Th, F / $9 per participant
Plants can’t walk, but they sure can travel. In this program, discover what plants need to grow, and take part in fun demonstrations showing the methods plants use to disperse their young without the luxury of feet! On our trails, observe the wide diversity of plants that grow in each habitat as you search for those plants that grow from the same tiny seeds you learned about.
HCPSS Recommended Field Experience: 2nd Grade, Quarter 4 NGSS Standards: 2-LS2-2, 2-LS4-1

Earth’s Place in Space
Grades 1-2 / 2 hours / Year-round availability on W, Th, F / $12 per participant
The nighttime sky is dynamic but what exactly causes it to change from one evening to the next? While seated in the comfort of our digital planetarium, witness the sunset and watch the transformation of our sky as the stars appear. Young students engage in making observations

about the world around them as they see the movement patterns of objects in the sky. View the constellations and hear the stories behind them. Outside of the planetarium, they examine actual meteorites and investigate the surface of Earth's moon. The majority of this field trip takes place in the planetarium. This field trip is limited to 100 total participants.
HCPSS Recommended Field Experience: 1st grade, Quarter 2 NGSS Standards: 1-ESS1-1, 1-ESS1-2

Do you offer additional types of programming for Pre-K through 1st grade students?
School's Out Camps
Summer camps

Do you have any self-guided field trip options?
Yes. They administer and provide nothing. Teachers are responsible for everything. Can accommodate up to 40 students. It is mostly summer camps use this option. Once in a while a school will attend, but the feedback is not positive. Most complaints are about this. He believes teachers are looking for a relaxing day, not a day to lead.

Visit date
No visit. Spoke with him on 09.28.2018.

Program observed
N/A

Program type
N/A

How do you evaluate success in your fieldtrip program?

Survey Monkey. Theirs is very comprehensive, and they have 60% return rate.

Comment cards are handed out. These are limited to feedback on a particular educator, and their return rate is lower.

What is most or least successful about your fieldtrip program?
Self-guided field trips

How are fieldtrips staffed?
One part is naturalist-led and the other is chaperone led.

What is expected of parents and teachers?
Chaperones are expected to lead exploration time portion of the trip.

What is your supervision ratio?
1:3 for preschool and early 2-year-olds; 1:5 for Grade K, 1 and 2

What is the maximum group size you accommodate?
In general, they can accommodate groups of up to 120.

Scheduling
On site for 2 ½ hours, 1-1 ½ hours of which is staff time
1 hour in the classroom
½ hour self-guided
½ hour for planetarium
½ hour for lunch

Developmental considerations for this age group?

Keep them moving.

Sensory bins work well.

Guessing games, like touching an object in a box that cannot be seen and guessing what it is works well. (pinecone example)

Are your field trips aligned to standards?
Yes, very clearly. NGSS and even recommendations for which quarter of the year they align with.

They have 2 school system employees on staff, and they meet with the curriculum writers of the schools. The 2 school employees both work part time. One focuses on elementary grades, and the other middle grades.

What barriers are there to field trips?

Price

Bussing. Half of his field trips have cancelled because they were unable to secure bussing.

Their website. It is through Howard County, so they are limited as to what they can do/change.

Do you require or offer any type of parent/teacher training? What type?
No

Special notes

Teacher info packet

- Collection and methods of payment
- Refund policy
- Cancellation policy
- Weather policy
- Dividing your students into groups
- Adults/student ratios
- Bus arrival/parking
- Field trip group roster
- Parent/chaperone field trip letter
- Driving directions

Teacher checklist

- Prior
- Day of
- After

Pre & post activities

Recently redid the scavenger hunt because teachers weren't doing it. It required them to bring clipboards, pencils, etc. Some teachers came prepared, while others did not. Now, an 11" x 17" laminated page, picture-based. Yet to determine the success of this revision.

Tips

- Be sure to let teachers know ahead of time what is expected of them.
- Give them a sample schedule. (This is what your day could look like.)

Expect the first few years to be a challenge.

Organization
United States Botanic Garden (USBG)

Type
Botanical garden

Location
100 Maryland Avenue, SW, Washington, DC 20001

Contact person
Lee Coykendall

Their position
Children's Education Specialist

Their email address
lcoykend@aoc.gov

What is your organization's mission?
The U.S. Botanic Garden is dedicated to demonstrating the aesthetic, cultural, economic, therapeutic and ecological importance of plants to the well-being of humankind. The USBG fosters the exchange of ideas and information relevant to national and international partnerships.

What guided field trip programming do you offer for Pre-K through 1st grade students?

Nothing specifically designed for early elementary.
Field trips are designed for grades 3-5, but can be taught at a variety of instructional levels.

They don't do any guided trips, but it is sometimes expected. Instead, they do a quick lesson and then turn them loose to do self-guided.

From Seed To Flower
Students will learn where seeds come from and how incredibly different seeds can be. We will unfold a seed's life cycle and explore a plant's needs. Students will create wearable greenhouses.

Dig In
Students will explore and map soil to better understand its complexity. We will explore the relationships between soil and plants. Students will combine soil with clay and seeds to make seed balls.

Pollination Station
Students will learn the parts of a flower and the special relationships that exist between flowers and their pollinators. Students will create 3D flower models and become pollinators to better understand mutualism and the science behind pollination.

Desert Dioramas

Students learn how plants survive in desert environments. We explore biomes and adaptations and contrast these adaptations to how plants might survive in a tropical environment. Students will express what they have learned through the creation of a desert diorama.

Architecture of a Flower
Students are guided through a flower dissection to better understand the intentional design and the reason for a flower. Students will be challenged to sketch and watercolor and connect their art to flower function.

Sugar Happens: A Lesson on Photosynthesis
How do you understand something you cannot see? During this lesson, students will experiment with air, use microscopes to view stomata and test the hypothesis that plants make their own food.

Plant Science of a Chocolate Chip Cookie
During this lesson students will learn about the plants behind the ingredients in a chocolate chip cookie. We will explore the geography of vanilla, cacao and sugar cane, the botany behind each of these plants and the complex processes in making vanilla extract, chocolate and sugar.

Plant Classification and Plant DNA
Students will learn about plant names, families and plant classification. Students will conduct a plant DNA extraction and learn how the discovery of a plant's DNA is changing plant science.

Now You See Me Now You Don't: Plant Conservation
Students will explore the reasons plants go extinct from habitat loss to invasive species and learn of the efforts being made to protect and conserve plants. We will explore our Conservatory and students will create their own barrel cactus.

Natives
Students will learn what it means to be native and through guided instruction, explore our outdoor Regional Garden. Students will observe plants in whatever season they are visiting and will learn about annuals and perennials, evergreens and deciduous and why native plantings are so important for our ecosystem.

Hands-on Discovery Station topics=
- Chocolate and the Reason for a Flower
- The Rich World of Soil
- Life Cycle of a Seed
- Ferns and Fossils
- How Plants Work: Photosynthesis

Do you offer additional types of programming for Pre-K through 1st grade students?
Sprouts program (ages 3-5)
Dig in to plants with your preschooler (ages 3-5). Join us for four weeks of art, science, and a walking adventure in our gardens as we explore the fascinating world of plants.
Please note: Children must be accompanied by an adult. Participating children must be at least 3 years of age. The 1:30 p.m. program is a repeat of the 10:30 a.m. program.

Do you have any self-guided field trip options?

Nothing specifically designed for early elementary.
Field trips are designed for grades 3-5, but can be taught at a variety of instructional levels.

Plant Passports- Parts of a Plant, Plants & Food (best for younger students)

How Plants Work- A Puzzle of Plant Parts, Are Plants Like Us, Plant Multiplication, Surviving Against the Odds, A Guide to Being Green

Junior Botanist backpack program (goes a little deeper than How Plants Work)

Field Journals- Sustainability in Bartholdi Park, A Trek through the Wilds of the US Botanic Garden Conservatory, Observations in the Regional Garden (best for older students)

Visit date
08.07.2018, Phone conversation

Program observed
N/A

Program type
N/A

How are fieldtrips staffed?
All are self-guided except for the hands-on activity portion, which is facilitated by staff.

What is expected of parents and teachers?
Behavior management

Scheduling
Allot approximately 2 hours.
20-25 minute rotations suggested.

Are your field trips aligned to standards?
Yes, but loosely, perhaps because of it's proximity to DC, Maryland, and Virginia.

What barriers are there to field trips?
Don't do any tours because the paths are too narrow
School has to justify $350-$400 bus rental

Do you require or offer any type of parent/teacher training? What type?
Optional 1-hour evening tour to share how to have a successful fieldtrip.

Special notes

Video- Tips for your field trip

Need to figure out how to get teachers comfortable. Teachers and chaperones already have a lot to do. So many challenges. And everything about our sites is foreign to them.
Maybe incorporate a social story for grown ups?

Live It Learn It model is successful because they develop the curriculum, do a pre-visit lesson at the school, pay for transportation, deliver the program on site, do a post-visit lesson at the school. Teachers have so much to do, they want someone to do the field trip for them.

Think of everything from A to Z!
What is their goal for coming? (Why are they bringing them and what do they hope to get?)
How can we help them?
Give them language for the field trip requirement form
Tell them how it aligns with standards

Decide what success looks like for my site (# of visitors, a learning objective, etc?)
Determine my objectives
Start way back there
There are so many layers

What does a successful fieldtrip look like?

- Pretend you know nothing!
- What do I need to get there?
- What do I need to know about on site logistics and way finding?
- How many chaperones do I need? (They opt for 1:6 for all groups because the paths are so narrow.)

Go on AF website and be naive.
Small staff, not web designers
Pretend I'm a teacher and try to find my way around.
Is it clear?
Does it cost money?
What materials are available? (pre/post)

Nobody's reading words- include videos

Consider the language- guided versus self-guided
They don't do any guided trips, but it is sometimes expected

Getting Started

- Learning goals and standards (loosely)
- Pre- and post- lesson facilitation guide
- Pre-lesson facilitation guide
- Botanist's journal & teacher guide
- Lesson
- Vocabulary list

Field Trip to the Garden

- Chaperone answer key and guide

- Lead teacher guide
- Student journal

Back in the Classroom

- Assessment
- Answer key
- Post- lesson
- Post-lesson facilitation guide
- Grading rubric

Sites Considered

1. Alice Ferguson Foundation at Hard Bargain Farm Environmental Center
2. Arcadia Farm Center for Sustainable Food & Ag
3. Benjamin Banneker Historical Park and Museum
4. Calvert Marine Museum
5. Calvert Nature Society
6. Charm City Farms
7. City Blossoms
8. Colonial Williamsburg
9. Cosca Park/ Clearwater Nature Center
10. Frederick County Parks & Rec
11. Greenwell Foundation
12. Historic Surratt House Museum
13. Historic London Town and Gardens
14. Howard County Conservancy
15. Huntley Meadows Park
16. Jug Bay Natural Area/ Patuxent River Park
17. Loudon Heritage Farm Museum
18. Maryland Agricultural Resource Council
19. Patuxent Research Refuge
20. Rose Hill Manor Park & Museum

Appendix 3

"Improving Children's Health through Play: Exploring Issues and Recommendations"
A collaboration between the Alliance for Childhood and the US Play Coalition, 2018.

https://usplaycoalition.org/wp-content/uploads/2018/04/Play-and-Health-White-Paper-FINAL.pdf

Begins on next page

Improving Children's Health through Play:
Exploring Issues and Recommendations

Joan Almon
Co-founder, Alliance for Childhood

A collaboration between the Alliance for Childhood and the US Play Coalition

Introduction

There is a growing body of research that shows that play contributes greatly to children's healthy development. In an extensive review of play research, Jeffrey Trawick-Smith of Eastern Connecticut State University, concludes that:

> Decades of research have shown that play is an important mediator in the physical, social, cognitive, and language development of young children. In spite of this, play faces threats from many directions in modern American life.[1]

Researchers and others focusing on play agree that children in the U.S. today have fewer opportunities to engage in play than did previous generations.[2] This leads to a situation known as "play deprivation" which is associated with a wide range of physical and emotional problems.

Pediatricians Ken Ginsburg and Regina Milteer, authors of the American Academy of Pediatrics' position papers on play, express special concern for children of poverty who are growing up with far too little opportunity to play freely outdoors. However, their concerns extend to all children, as indicated in the following statement:

> [E]ven those children who are fortunate enough to have abundant available resources and who live in relative peace may not be receiving the full benefits of play. Many of these children are being raised in an increasingly hurried and pressured style that may limit the protective benefits they would gain from child-driven play. Because every child deserves the opportunity to develop to their unique potential, child advocates must consider all factors that interfere with optimal development and press for circumstances that allow each child to fully reap the advantages associated with play.[3]

Why is play such a potent element of child development? Jaak Panksepp, a leading researcher in the field at the University of Washington, emphasizes that play contributes greatly to healthy brain development. He points out that play is one of the primary processes in our lower subcortical brain that helps us "anticipate and respond to situations that promote or threaten our survival." Play also supports the development of the more sophisticated parts of the brain, which are necessary for higher forms of cognition and the self-regulation of our emotions.[4]

In an NPR interview, Panksepp concludes that, "The function of play is to build pro-social brains, social brains that know how to interact with others in positive ways." In the same interview, Sergio Pellis, a researcher at the University of Lethbridge in Alberta, Canada, speaks of the important role of play in cognitive development: "An added bonus is that the skills associated with play ultimately lead to better grades. In one study, researchers found that the best predictor of academic performance in eighth grade was a child's social skills in third grade." He points to recess play as an important contributor to social skills as well as academic achievement: "Countries where they actually have more recess tend to have higher academic performance than countries where recess is less."[5]

A study, conducted by Charles Hillman of Northeastern University, illustrates the benefits of play by linking physical play with brain health and development. During the study, which began during his time at the University of Illinois, 110 children were enrolled in an afterschool program that centered on "wild, childish fun," and a control group of 110 were put on a wait list for the program but did not participate in it.

During the two-hour sessions which took place throughout the school year, the children enrolled in the play sessions were active for an average of 70 minutes, interspersing play with rest according to their own choices. Pedometers were used, which indicated that children ran about two miles each day during these playtimes. Age ranges of participating children were 8- and 9-years-old.

> This group was of particular interest to the researchers because previous studies had determined that at that age, children typically experience a leap in their brain's so-called executive functioning, which is the ability to impose order on your thinking. Executive functions help to control mental multitasking, maintain concentration, and inhibit inappropriate responses to mental stimuli. Children whose executive functions are stunted tend to have academic problems in school, while children with well-developed executive functions usually do well.[6]

At the end of the program, both groups returned to the university to repeat physical and cognitive tests, and the results were significant.

> As would have been expected, the children in the exercise group were now more physically fit than they had been before, while children in the control group were not. The active children also had lost body fat, although changes in weight and body composition were not the focus of this study. … More important, the children in the exercise group also displayed substantial improvements in their scores on each of the computer-based tests of executive function. They were better at "attentional inhibition," which is the ability to block out irrelevant information and concentrate on the task at hand, than they had been at the start of the program.

Tellingly, the children who had attended the most exercise sessions showed the greatest improvements in their cognitive scores. Meanwhile, the children in the control group also raised their test scores, but to a much smaller extent. In effect, both groups' brains were developing, but the process was more rapid and expansive in the children who ran and played.[7]

A growing body of research points to the benefits of child-initiated play in preventing and treating a number of childhood conditions that are on the rise including obesity, attention-deficit/hyperactivity disorder, anxiety, depression, and weak bone development.

Childhood Obesity

The Centers for Disease Control and Prevention finds that "More than 70 percent of Americans are either overweight or obese, meaning that an unhealthy weight is now the norm. Healthy weight Americans – who have a BMI of less than 25 – are now in the minority."[8]

The American Heart Association reports that about one in three American children and teens is overweight or obese. The rate of obesity in children has more than tripled between 1971 and 2011. The Association describes the level of concern regarding childhood obesity as follows:

> With good reason, childhood obesity is now the No. 1 health concern among parents in the United States, topping drug abuse and smoking. Among children today, obesity is causing a broad range of health problems that previously weren't seen until adulthood. These include high blood pressure, type 2 diabetes and elevated blood cholesterol levels. There are also psychological effects: Obese children are more prone to low self-esteem, negative body image and depression.[9]

A sobering statement from former Surgeon General Richard Carmona summarizes the threat of childhood obesity in this way: "Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents."[10]

How can childhood obesity be addressed most effectively? For years, the use of a two-pronged approach has been popular – diet and exercise – and this has led to some reduction in childhood obesity. In 2016, the Centers for Disease Control stated:

> We are beginning to see some progress reducing childhood obesity in some areas, but more progress is needed. Only by accelerating and sustaining this trend can we reverse the epidemic of childhood

"The function of play is to build pro-social brains, social brains that know how to interact with others in positive ways."

obesity.[11]

Fortunately, a third element is now being recognized – active, outdoor play. The Obesity Society offers a list of tips to parents, and among them is this suggestion about play: "Encourage free play in young children and provide environments that allow children to play indoors and outdoors."[12]

In the past, children played for hours each day – a combination of active games such as hopscotch, jump rope and ball games, as well as imaginative outdoor play. School-aged children were independent and creative in organizing their own games, and they did not need expensive equipment or adult direction. A growing number of play advocates today are finding ways to bring such play back into children's lives in school and outside of school. Many of their stories are told in a new book, *Playing It Up – With loose parts, playpods, and adventure playgrounds*.[13]

Government agencies and non-profit organizations are now looking at the value of play in treating and preventing obesity. An NIH-sponsored, long-term study of how to prevent obesity in young children includes play in its focus and describes its study in an article entitled "Addressing childhood obesity where children live, learn, and play."[14]

Attention-Deficit/Hyperactive Disorder

In 2013, the Centers for Disease Control and Prevention published its first comprehensive report on children's mental health in the U.S. It notes that between ages 3 and 17, attention-deficit/hyperactive disorder (ADHD) is the most prevalent mental health problem, affecting 6.8% of children. Other problems include behavioral or conduct problems (3.5% of children), anxiety (3.0%), depression (2.1%), and autism spectrum disorders (1.1%).[15]

In a scholarly article entitled "Play and ADHD," researchers Jaak Panksepp and Sheri Six report that brain imaging (MRI's) showed that children diagnosed with ADHD often have slightly smaller brains, especially in frontal cortical areas involved in executive functions (e.g. impulse control) and coordination of movements. Studies involving humans and animals have found that periods of physical play result in specific neurochemical and dendritic changes in many neurons, especially in those brain areas in which ADHD children are deficient. Therefore, long-term engagement in physical play may be an effective, non-medicinal therapy for reducing some of the disruptive behaviors of ADHD and facilitating brain development in children diagnosed with the disorder. Six and Panksepp state:

> Research into the benefits of play is only just beginning but results suggest that adding ample play opportunities may help improve the success of ADHD treatment, especially in regards to social success, which thus far has been little improved by stimulant or behavioral treatments. We must keep in mind, though, that children with ADHD often have difficulties making and keeping friends, probably due to poor social skills, and their play can often end in aggression and rejection so many play interactions may result in negative rather than positive experiences. One way to minimize the number of negative play outcomes may be to provide children with abundant rough and tumble play experiences that build and refine the social brain during the first few years of children's lives before any ADHD diagnosis is appropriate. Play, after all, is beneficial for all children, not just children with ADHD. Since play also improves self-control, attention and hyperactivity, it may be that early play could prevent at least some diagnoses of ADHD as children age.[16]

Six and Panksepp conclude with concerns about the long-term effects of medication for ADHD on brain development and the need for more targeted research, as well as the use of non-drug interventions such as play:

> Indeed, it is best that children have a regular "diet" of play from their earliest years, with enough adult supervision to assure that naughty behaviors can be discouraged, and hence the positive benefits of play can be consolidated into lasting adaptive behavior patterns, characterized by good self-regulation and empathy toward others. As Plato said over two millennia ago: "Our children from their earliest years must take part in all the more lawful forms of play, for if they are not surrounded with such an atmosphere they can never grow up to be well conducted and virtuous citizens."[17]

Anxiety and Depression

A 2017 article in *The New York Times* explores why there is a great increase in teens suffering from severe anxiety. It cites data from the annual survey of students by the American College Health Association which reports that in 2011 50% of students reported "overwhelming anxiety." In 2016, the number rose to 62%. Another survey has asked incoming college freshmen at UCLA if they felt overwhelmed by all they had to do. The survey began in 1985 when 18% said they did. By 2010, that

number had increased to 29; In 2016 it surged to 41%.[18]

Developmental psychologist Peter Gray, professor emeritus of Boston University, authored a book on the value of play called *Free to Learn*[19] in which he describes the rise in mental health problems by pointing to the results of well-respected psychological tests that have been given to children and teens over the past 50 or more years. One example is the Minnesota Multiphasic Personality Inventory for college students and its companion test for high school students which are designed to assess mental disorders. When the test results of over 77,000 students between 1938 and 2007 were evaluated by Jean Twenge of San Diego State University, dramatic increases in anxiety and depression were found. Gray comments, "The results are truly disheartening." About 85% of young people today have scores greater than the average for the same age group in the 1950s.[20]

In 1938, 1% of students were considered to suffer from depression, based on their responses to the questionnaire. By 2007 the numbers had grown to 6%, and Twenge warns it might be much higher given how many students are now medicated for depression. The medications alleviate the symptoms the questionnaires ask about, but also have their own side effects.[21]

Why are our young people so unhappy? Gray explains: "One thing we know for sure about anxiety and depression is that they correlate strongly with people's sense of control or lack of control over their own lives. Those who believe they are in charge of their own fate are much less likely to become anxious or depressed than those who believe they are victims of circumstances beyond their control."[22] Being able to initiate and direct their own play is an important way for children to feel in control of themselves and their environment.

Gray describes a study of happiness in sixth to twelfth graders by Mihalyi Csikszentmihalyi and Jeremy Hunter of Claremont Graduate University. They engaged more than 800 students from 33 different schools in 12 different communities in a week-long study, during which the students wore special watches that released a signal at random times throughout the day and evening. Each time, the students recorded what they were doing and their state of happiness. The outcomes were clear: children were happiest when they were out of school conversing or playing with friends and were least happy when in school. Spending time with parents fell in the middle range.[23] In general, the lives of children today are highly structured or filled with media, so that they have little free time to converse and play with friends. More research is needed, but it is very likely that their growing unhappiness is related to this lack of free time for play.

Weak Bone Development

Weak bone development in childhood has become an additional health concern. According to a 2003 study by the Mayo Clinic, which compared fracture rates in children between 1969-1971 and 1999-2001, the rate among young people had increased 42% over three decades. Among girls it had increased 56%, and among boys, 32%.[24]

The American Academy of Orthopaedic Surgeons (AAOS) is very concerned about the weak bone strength it is seeing in today's children and has mounted a campaign calling for more physical activity – including play – for children and teens. They point to the sedentary lifestyle of many children, including long hours spent with screens, as contributing to weak bone development during childhood. This, in turn, can lead to increases in osteoporosis and bone fractures in later life. The AAOS explains:

> In fact, the more bone mass created during childhood and adolescence, the greater the chance of preventing osteoporosis (brittle and weak bones) and related fractures later in life. As a child grows, bone is made and then constantly reshaped to keep its function. In the process of normal growth, much more bone is made than removed, allowing the skeleton to grow in size and density. Up to 90% of peak bone mass is acquired in girls by age 18 and in boys by age 20, making childhood the absolute best time to invest in bone health through proper nutrition and exercise.[25]

The International Osteoporosis Foundation (IOF) gives helpful data on the relationship between building bone strength in childhood and loss of bone strength later in life:

> In girls, the bone tissue accumulated during the ages of 11 to 13 approximately equals the amount lost during the 30 years following menopause. In fact, it's estimated a 10% increase of peak bone mass in all children reduces the risk of an osteoporotic fracture during adult life by 50%. One study has shown physically active young girls gain about 40% more bone mass than inactive girls of the same age.[26]

Put simply, the National Institutes for Health (NIH) describe the need for more bone strength in childhood

this way:

> Building your children's "bone bank" account is a lot like saving for their education: The more they can put away when they're young, the longer it should last as they get older.[27]

While diet plays an important role in strong bone growth, physical movement also contributes greatly to it. Outdoor play and other forms of physical movement need to be a regular part of children's lives, and at least 60 minutes a day of physical activity is strongly recommended for children and adolescents by the Centers for Disease Control.[28]

An online article about children's bone problems by *Parents* magazine points to the lack of calcium in children's diet as one cause, but it also points to the need for more movement as an important element in building strong bones. Regarding outdoor play, it concludes:

> To build strong bones, kids need more than calcium; they need daily exercise. As muscles contract during high-intensity activity, the tendons that attach them tug against your child's bones to stimulate growth. Too many kids live sedentary lives these days. According to one study, preschoolers get just half of the 60 minutes of daily exercise recommended by the Centers for Disease Control. Boost your child's activity level by taking him to the park regularly and letting him play outside as often as possible.[29]

A Solution: Loose parts in play

The Centers for Disease Control, the National Institutes of Health, the American Heart Association, and other leading health organizations recommend play as a vital element for healthy development. They are joined by many psychiatrists, psychologists, pediatricians, and other health professionals who are calling for a return to play.

For example, the position statement on play by the American Occupational Therapy Association states:

> Occupational therapy practitioners support, enhance, and defend children's right to play as individuals and as members of their families, peer groups, and communities by promoting recognition of play's crucial role in children's development, health, and well-being…[30]

With attention shifting toward active play for children, new approaches for successfully fostering such play are arising. While play on fixed equipment encourages climbing, swinging, sliding, etc., research in Australia has found an approach that is even more effective in stimulating physical activity – the use of loose parts in play. These open-ended materials, such as tires, tubes, and cardboard boxes, are used by children in dozens of ways. They are increasingly provided to children during school recess and in after-school programs, first in the U.K. and now in the U.S. and Canada. Loose parts can be used alone or in combination with fixed equipment.[31]

The 2014 Australian study examined ways to increase children's physical activity during school recess in primary schools. Two schools took part in the study of recess activity: a new school that did not yet have any fixed equipment or designated sports areas was compared with another which had sports areas and fixed equipment already in place. The new school was supplied with some typical play items such as balls, hoops, and jump ropes, but it was also supplied with loose parts that included milk crates, pool noodles, buckets, bales of hay, water, sand, and much more. The older school did not utilize loose parts other than sports equipment. In both settings, the amount of movement was measured with pedometers during lunch recess. The study concluded that simple, low-cost loose parts was an effective intervention that led to more physical activity than fixed equipment and sports areas alone. Physical activity gains were measured in steps taken per minute and distance covered per minute.[32]

The study's conclusion is well worth noting:

> Examining the effects of this school playground intervention over a school year suggested that the introduction of movable/recycled materials can have a significant, long-term positive effect on children's PA [Physical Activity]. The implications from this simple, low-cost intervention provide impetus for schools to consider introducing the concept of a movable/recycled materials intervention on a wider scale within primary school settings.[33]

Playpods – storage sheds in schoolyards that are filled with loose parts – can be found in many schools in England[34] and a growing number in the U.S.[35] This approach has proven very effective in helping children to play physically, socially, and creatively. Since recess staff is already on hand, costs for the loose parts approach is generally affordable to schools. Some basic training for recess staff, however, is very helpful for learning about

the nature of play and how to support children's play without unnecessary interference.

A focus on installing playpods and loose parts in schools for recess and after-school programs could be a huge step in addressing the problem of childhood obesity and its related illnesses, including type 2 diabetes.

Recommendations

Fortunately, child-initiated play is making a comeback. But more rapid, wide-spread progress is needed to avoid additional suffering from play deprivation and to heal children already affected by it. This means that funding support and strategic planning are needed so that local play initiatives can become well-grounded and sustainable. Workshops and trainings are needed for those who are supporting children's play, as well as for health professionals so that they can become strong advocates for play.

Conclusion:

There is growing evidence linking children's play to health, and the absence of play to the increase in physical and mental illnesses. Fortunately, there is a growing public awareness that play is essential to children's health and well-being, and a movement for play is growing across North America. Organizations including the U.S. Play Coalition, the Alliance for Childhood, the North American Adventure Play Association (NAAPA), and many local organizations are advocating for play and creating local play projects.

Now is the time for policy makers, educators, recreation workers, and the health industry – insurance companies, hospitals, health organizations, and health practitioners – to join forces with play advocates. These partnerships are essential to ensure access and opportunities for self-directed play that will strengthen the health and well-being of every child.

To grow and sustain the play movement, financial support is needed for:

- Trainings for teachers, recreation specialists, outdoor educators, and others on how to support children's play
  - Acquiring "loose parts" materials and storage sheds
  - Developing locally-based play projects that are sustainable
  - Community-wide engagement in play
- Workshops and educational materials for professionals and parents to help them advocate for play

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usplaycoalition.clemson.edu
allianceforchildhood.org

Appendix 4

Maryland Children's Outdoor Bill of Rights
www.dnr.maryland.gov/cin

"Every Maryland child shall have the opportunity to:

Discover and connect with their natural world
Play & learn outdoors
Splash & swim in the water
Camp under the stars
Follow a trail
Catch a fish
Watch wildlife
Explore wild places close to home
Celebrate their culture & heritage
Share nature with a great mentor or teacher"

Appendix 5

Excerpted from “The Convention on the Rights of the Child”

“Adopted and opened for signature, ratification and accession by General Assembly resolution 44/25 of 20 November 1989 entry into force 2 September 1990, in accordance with article 49.”

“Article 31
1. States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.
2. States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational and leisure activity.”

Appendix 6

Excerpted from "Preschooler development"
Medline Plus
https://medlineplus.gov/ency/article/002013.htm

The normal social and physical development of children ages 3 to 6 years old includes many milestones.

Information

All children develop a little differently. If you are concerned about your child's development, talk to your child's health care provider.

PHYSICAL DEVELOPMENT

The typical 3- to 6-year-old:

- Gains about 4 to 5 pounds (1.8 to 2.25 kilograms) per year
- Grows about 2 to 3 inches (5 to 7.5 centimeters) per year
- Has all 20 primary teeth by age 3
- Has 20/20 vision by age 4
- Sleeps 11 to 13 hours at night, most often without a daytime nap

Gross motor development in the 3- to 6-year-old should include:

- Becoming more skilled at running, jumping, early throwing, and kicking
- Catching a bounced ball
- Pedaling a tricycle (at 3 years); becoming able to steer well at around age 4
- Hopping on one foot (at around 4 years), and later balancing on one foot for up to 5 seconds
- Doing a heel-to-toe walk (at around age 5)

Fine motor development milestones at about age 3 should include:

- Drawing a circle
- Drawing a person with 3 parts
- Beginning to use children's blunt-tip scissors
- Self-dressing (with supervision)

Fine motor development milestones at about age 4 should include:

- Drawing a square
- Using scissors, and eventually cutting a straight line
- Putting on clothes properly
- Managing a spoon and fork neatly while eating

Fine motor development milestones at about age 5 should include:

- Spreading with a knife
- Drawing a triangle

LANGUAGE DEVELOPMENT

The 3-year-old uses:

- Pronouns and prepositions appropriately
- Three-word sentences
- Plural words

The 4-year-old begins to:

- Understand size relationships
- Follow a 3-step command
- Count to 4
- Name 4 colors
- Enjoy rhymes and word play

The 5-year-old:

- Shows early understanding of time concepts
- Counts to 10
- Knows telephone number
- Responds to "why" questions

Stuttering may occur in the normal language development of toddlers ages 3 to 4 years. It occurs because ideas come to mind faster than the child is able to express them, especially if the child is stressed or excited.

When the child is speaking, give your full, prompt attention. Do not comment on the stuttering. Consider having the child evaluated by a speech pathologist if:

- There are other signs with the stuttering, such as tics, grimacing, or extreme self-consciousness.
- The stuttering lasts longer than 6 months.

BEHAVIOR

The preschooler learns the social skills needed to play and work with other children. As time passes, the child is better able to cooperate with a larger number of peers. Although 4- to 5-year-olds may be able to start playing games that have rules, the rules are likely to change, often at the whim of the dominant child.

It is common in a small group of preschoolers to see a dominant child emerge who tends to boss around the other children without much resistance from them.

It is normal for preschoolers to test their physical, behavioral, and emotional limits. Having a safe, structured environment in which to explore and face new challenges is important. However, preschoolers need well-defined limits.

The child should display initiative, curiosity, the desire to explore, and enjoyment without feeling guilty or inhibited.

Early morality develops as children want to please their parents and others of importance. This is commonly known as the "good boy" or "good girl" stage.

Elaborate storytelling may progress into lying. If this is not addressed during the preschool years, this behavior may continue into the adult years. Mouthing off or backtalk is most often a way for preschoolers to get attention and a reaction from an adult.

Appendix 7
Excerpted from "Topics"
National Association for the Education of Young Children (NAEYC)
https://www.naeyc.org/resources/topics

- Anti-Bias Education
- Back to School
- Common Core
- Coping With Stress and Violence
- Developmentally Appropriate Practice (DAP)*
- Family Engagement
- Guidance and Challenging Behaviors*
- Literacy
- Math
- Play*
- Social and Emotional Development*
- STEM
- Technology and Media

*These topics are especially relevant to the proposed field trips.

Appendix 8

Other Resources

Site	Location	Type	Mission
Ag Research Service	Local	Agriculture	ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination to: *ensure high-quality, safe food, and other agricultural products *assess the nutritional needs of Americans *sustain a competitive agricultural economy *enhance the natural resource base and the environment, and *provide economic opportunities for rural citizens, communities, and society as a whole.
Alliance for Childhood	Local	Play	The Alliance is engaged in a multi-pronged campaign to restore play to children's lives and to introduce the profession of playwork in the U.S.
Alliance for Climate Education	National	Education	To educate young people on the science of climate change and empower them to take action.
American Academy of Pediatrics	National	Health	Dedicated to the health of all children.

American Association for the Advancement of Science (AAAS)	Local	Science	The AAAS seeks to "advance science, engineering, and innovation throughout the world for the benefit of all people."
American Forest Foundation	Local	Forest	AAF ensures the sustainability of America's family forests for present and future generations in conjunction with our strategic partners.
American Society of Plant Biologists	Local	Biology	The American Society of Plant Biologists was founded in 1924 to promote the growth and development of plant biology, to encourage and publish research in plant biology, and to promote the interests and growth of plant scientists in general.
Arkive	International	Conservation	With the help of the world's best wildlife filmmakers and photographers, conservationists and scientists, we are creating an awe-inspiring record of life on Earth.

Association for Supervision and Curriculum Development (ASCD)	Local	Education	ASCD is dedicated to excellence in learning, teaching, and leading so that every child is healthy, safe, engaged, supported, and challenged.
Association of Children's Museums	Local	Museums	Champions children's museums worldwide.
Association of Fish & Wildlife Agencies	Local	Wildlife	To support and advocate for State, Provincial, and Territorial responsibility for science-based fish and wildlife conservation.
Association of Nature Center Administrators	National	Nature	The Association of Nature Center Administrators promotes and supports best leadership and management practices for the nature and environmental learning center profession.

Association of Science Technology Centers	Local	Science	The Association of Science-Technology Centers (ASTC) and its member institutions—science centers and science museums around the world—are committed to advancing public understanding of science and contributing to the development of a scientifically literate society.
Audubon Naturalist Society	Local	Nature	The Audubon Naturalist Society inspires residents of the greater Washington, DC, region to appreciate, understand, and protect their natural environment through outdoor experiences, education, and advocacy.
Audubon Maryland-DC	Local	Ornithology (birds)	To conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity.

Baltimore Green Map	Local	Mapping	Baltimore Green Map promotes the discovery, use, and stewardship of the Baltimore region's natural, cultural and "green living" resources.
Bay Backpack	Local	Environmental education	Bay Backpack is an online resource that supports hands-on environmental learning.
Beetles Project	National	Environmental education	Resources for outdoor science programs
Chesapeake Bay Foundation	Local	Environmental education	Save the Bay™, and keep it saved, as defined by reaching a 70 on CBF's Health Index.
Children & Nature Network	National	Nature	We are leading a global movement to increase equitable access to nature so that children– and natural places–can thrive. We do this by investing in leadership and communities through sharing evidence-based resources, scaling innovative solutions and driving policy change.

Citizen Science Central	National	Citizen science	Citizen science, volunteer monitoring, participatory action research... this site supports organizers of all initiatives where public participants are involved in scientific research.
Club SciKidz-Chesapeake	Local	Science	Part of our mission at Club SciKidz Chesapeake is to nurture in children a life-long passion for inquiry and discovery.
Colonial Williamsburg's Resource Library	Local	History	N/A
Community Works Institute	National	Education	Teaching for student engagement, empathy, and community
Conner Prairie	National	Museum	We inspire curiosity and foster meaningful interaction with unique, engaging experiences that don’t exist anywhere else.

Cultural Competence Learning Institute (CCLI)	National	Cultural competency	CCLI encourages institutions to identify and build from their strengths, so that they can maximize the benefits of diversity within their workforce and improve the services offered to people from different cultural backgrounds.
DC Greens	Local	Garden	DC Greens uses the levers of food education, food access, and food policy to advance food justice in the nation's capital.
Discover U Children's Museum	Local	Museum	The Discover U Children's Museum will empower the next generation of change-makers and enrich all children through exploration and play, sparking lifelong learning, confidence and compassion rooted in S.T.E.A.M. and environmental education.

Eastern National	National	Parks	Eastern National is a 501(c)3 not-for-profit cooperating association, supporting the interpretive, educational, and scientific programs and services of the National Park Service and our other public trust partners.
Education Next	National	Education	In the stormy seas of school reform, this journal will steer a steady course, presenting the facts as best they can be determined, giving voice (without fear or favor) to worthy research, sound ideas, and responsible arguments.
Education World	National	Education	This community has been created to celebrate and support the creativity and dedication of all those who participate in the education of young children.

Edutopia	National	Education	Our Foundation is dedicated to transforming K-12 education so that all students can acquire and effectively apply the knowledge, attitudes, and skills necessary to thrive in their studies, careers, and adult lives.
Empowered Educator	International	Education	Blog
Facing History and Ourselves	National	History	Our mission is to engage students of diverse backgrounds in an examination of racism, prejudice, and antisemitism in order to promote the development of a more humane and informed citizenry.
Fairchild Tropical Botanic Garden	National	Garden	Beneath Fairchild's serene surface lies a robust institution teeming with scientists, educators, horticulturists and professionals dedicated to connecting people with tropical plants.

Farm to Pre School	National	Education	Its goals are multi-level and include: influencing the eating habits of young children while their preferences are forming; creating healthy lifestyles through good nutrition and experiential opportunities such as gardening; improving healthy food access at home and within the community; and ultimately influencing policies to address the childhood obesity epidemic through a local food lens.
Farm-Based Education Network	National	Agriculture	Our mission is to inspire, nurture and promote farm-based education.
Flying Wild	National	Ornithology (birds)	Flying WILD's focus on migratory birds is designed to inspire young people to discover more about the natural world.

Getting Little Feet Wet	National	Water	Project WET's mission is to reach children, parents, teachers and community members of the world with water education that promotes awareness of water and empowers community action to solve complex water issues.
Great Schools	National	Education	Great Schools is the leading national nonprofit empowering parents to unlock educational opportunities for their children.
Green Hearts	N/A	Nature	Dedicated to restoring and strengthening the bonds between children and nature.
Green Schoolyards America	National	Schoolyards	Green Schoolyards America inspires and enables communities to enrich their school grounds and use them to improve children's well-being, learning and play while contributing to the ecological health and resilience of their cities.

Growing Up Wild	Local	Education	Growing Up WILD is an early childhood education program that builds on children's sense of wonder about nature and invites them to explore wildlife and the world around them.
Head Start- Early Childhood Learning & Knowledge Center	N/A	Education	N/A
Historic Surratt House Museum	Local	History	The mission of the Surratt House Museum is to foster an appreciation for the history and culture of 19th-century Maryland and Prince George's County.
Katydid Preschool Programs	Local	School	N/A

Kids Gardening	National	Gardening	We create opportunities for kids to learn through gardening, engaging their natural curiosity and wonder by providing inspiration, community know-how and resources.
Live It Learn It (LILI)	Local	Education	Live It Learn It partners with schools and cultural institutions to create and deliver experiential learning opportunities for students in order to increase students' self-efficacy, motivation, and achievement.
Maryland Agriculture Education Association	Local	Agriculture	The Maryland Agricultural Education Foundation, Inc. strives to promote the understanding and appreciation of the importance of agriculture in our daily lives.

Maryland Association for Environmental and Outdoor Education (MAEOE)	Local	Education	The Maryland Association for Environmental and Outdoor Education (MAEOE) encourages, engages and empowers our community to understand, responsibly use and promote the natural world.
Maryland Coalition for Inclusive Education	Local	Education	Our mission is to be the catalyst for the meaningful and successful inclusion of all students in their neighborhood schools.
Maryland Department of Ag	Local	Agriculture	Our Mission is to provide leadership and support to agriculture and the citizens of Maryland by conducting regulatory, service, and educational activities that assure consumer confidence, protect the environment, and promote agriculture.
Maryland Department of Disabilities	Local		Changing Maryland for the better by promoting equality of opportunity, access, and choice for Marylanders with disabilities.

Maryland Department of Natural Resources (DNR)	Local	Environmental education	The Department of Natural Resources leads Maryland in securing a sustainable future for our environment, society, and economy by preserving, protecting, restoring, and enhancing the State's natural resources.
Maryland Department of the Environment	Local	Environmental education	To protect and restore the environment for the health and well-being of all Marylanders.
Maryland Historical Trust /Heritage Areas	Local	History	The Maryland Historical Trust is the state agency dedicated to preserving and interpreting the legacy of Maryland's past.
Maryland State Department of Education (MSDE)	Local	Education	N/A
Mass Audubon- Drumlin Farm	National	Education	To protect the nature of Massachusetts for people and for wildlife.

NASA	Local	Air & space	To provide educators with standards-based videos, activities & lessons, that increase STEM literacy through the lens of NASA.
National Agriculture in the Classroom	National	Agriculture education	The mission of Agriculture in the Classroom is to "increase agricultural literacy through K-12 education." An agriculturally literate person is defined as "one who understands and can communicate the source and value of agriculture as it affects our quality of life."
National Association for the Education of Young Children (NAEYC)	Local	Education	NAEYC promotes high-quality early learning for all children, birth through age 8, by connecting practice, policy, and research.
National Environmental Education Association (NEEF)	Local	Environmental education	Make the environment ever-present in the daily lives of Americans by delivering practical, accessible information they can use through the sources they know and trust.

National Museum of African American History & Culture	Local	Museum	The National Museum of African American History and Culture is the only national museum devoted exclusively to the documentation of African American life, history, and culture.
National Museum of the American Indian (NMAI)	Local	Museum	Native Knowledge 360° (NK360°) provides educators and students with new perspectives on Native American history and cultures.
National Oceanic and Atmospheric Administration	Local	Ocean & atmosphere	NOAA is an agency that enriches life through science. Our reach goes from the surface of the sun to the depths of the ocean floor as we work to keep the public informed of the changing environment around them.
National Park Service	National	Parks	The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations.

National Recreation and Park Association	Local	Parks	To advance parks, recreation and environmental conservation efforts that enhance the quality of life for all people.
National Science Teachers Association	Local	Science	NSTA's mission is to promote excellence and innovation in science teaching and learning for all.
National Wildlife Federation	Local	Environmental education	Through programs, curriculum, scientific reports, and more, the National Wildlife Federation is furthering knowledge about nature and wildlife, and inspiring future environmental stewards.
Native Land Map	N/A	Native American	N/A

Natural Start Alliance	Local	Education	Natural Start connects the people who teach young children—whether they are professionals or parents—with the tools they need to create great educational experiences that help young children explore the natural world, understand their environment, and build lifelong skills that will help keep them active and engaged in their communities.
Nature Explore	National	Education	To support your important efforts to connect children with nature.
North American Environmental Education Association	Local	Education	We bring the brightest minds together to accelerate environmental literacy and civic engagement through the power of education.

NPR Ed	National	Education	The mission of NPR, in partnership with its member stations, is to create a more informed public, one challenged and invigorated by a deeper understanding and appreciation of events, ideas, and culture within the United States and across the globe.
Pioneer Farm Museum	National	History museum	Dedicated to providing living history, environmental, and cultural education opportunities through hands-on activities and experiences.
Play Corps	National	Play	We build communities through play and recreation.
Project Learning Tree	Local	Environmental education	Project Learning Tree advances environmental literacy and promotes stewardship through excellence in environmental education, professional development, and curriculum resources that use trees and forests as windows on the world.

Project WET	National	Water	We develop and deliver the world's best water education resources, organize special water events, manage a worldwide network of local implementing partners and advocate for the role of water education in solving the world's most pressing water issues.
Project WILD	Local	Wildlife	The goal of Project WILD is to assist learners of any age in developing awareness, knowledge, skills, and commitment resulting in informed decisions, responsible behavior, and constructive actions concerning wildlife and the environment.
Service Learning in Maryland	Local	Education	We offer many time-tested service-learning resources for teachers, students, and other educators.
Shedd Aquarium	National	Aquarium	To spark compassion, curiosity, and conservation for the aquatic animal world.
Shelburne Farms	National	Agriculture	To inspire and cultivate learning for a sustainable future.

Shenandoah Valley Agricultural Research and Extension Center/ McCormick Farm	Local	Extension	To provide agricultural producers and Extension educators in Virginia and the mid-Atlantic region with applied, research-based information on the soil, animal, and plant components of forage-based livestock systems.
Smithsonian Center for Education and Museum Studies (SCEMS)	Local	Museum studies	N/A
Smithsonian Education	Local	Education	N/A
Teaching History	N/A	History	N/A
US Fish and Wildlife Service	Local	Wildlife	Work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people.

US National Library of Medicine	Local	Health	Accelerate discovery and advance health through data-driven research. Reach more people in more ways through enhanced dissemination and engagement. Build a workforce for data-driven research and health.
US Play Coalition	National	Play	To promote the value of PLAY throughout life.
YouTube	International	Videos	YouTube's mission is to provide fast and easy video access and the ability to share videos frequently.
Zinn Education Project	Local	History	Promotes and supports the teaching of people's history in classrooms across the country.