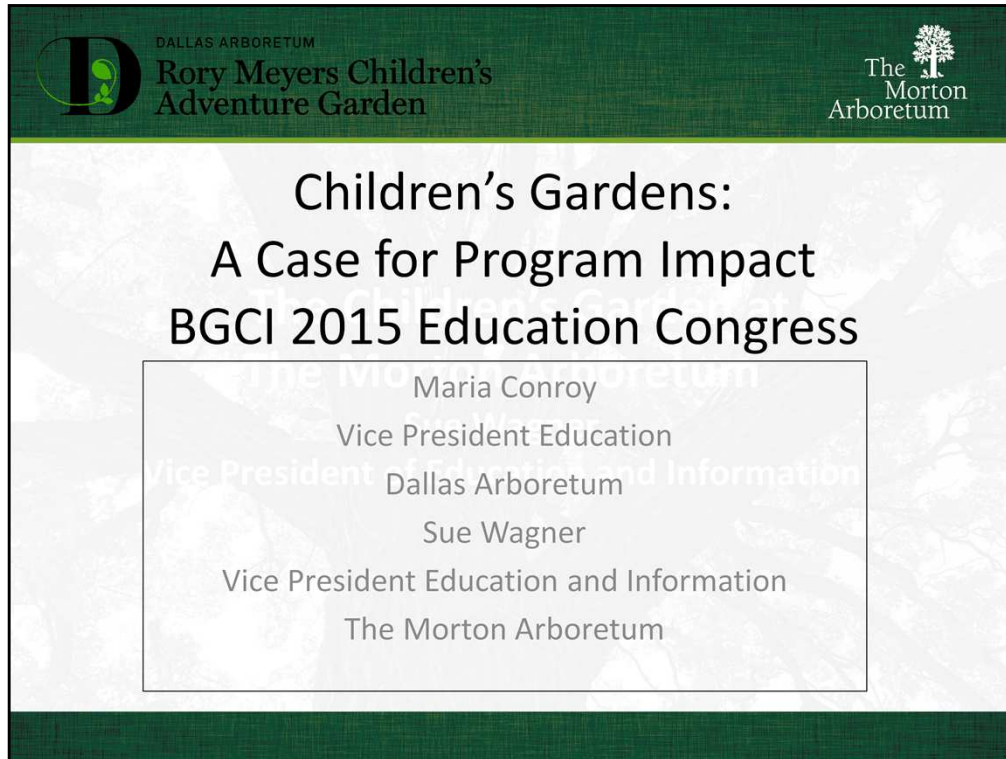




The Morton Arboretum has a long history of tree conservation and natural science education, notably through the hands-on natural science program developed in the 1940s by naturalist May T. Watts. Over the years, the Education program at the Arboretum provides learners the opportunity to access Arboretum tree knowledge and information, and provides experiences that inspire exploration, discovery, and connection to trees.



Join us in the conversation about the impact Children's Gardens have on your visitors.

Tweet Sue @slwag

Hashtag bgci2015edu

Tweet Maria



DALLAS ARBORETUM

Rory Meyers Children's
Adventure Garden



Core points:

Know Your Audience

The Planning Process is Critical to
Success

Evaluate impact

Children's Gardens



DALLAS ARBORETUM
Rory Meyers Children's
Adventure Garden



The Morton
Arboretum

Tell us. . .
Do you have a Family or Children's Garden?

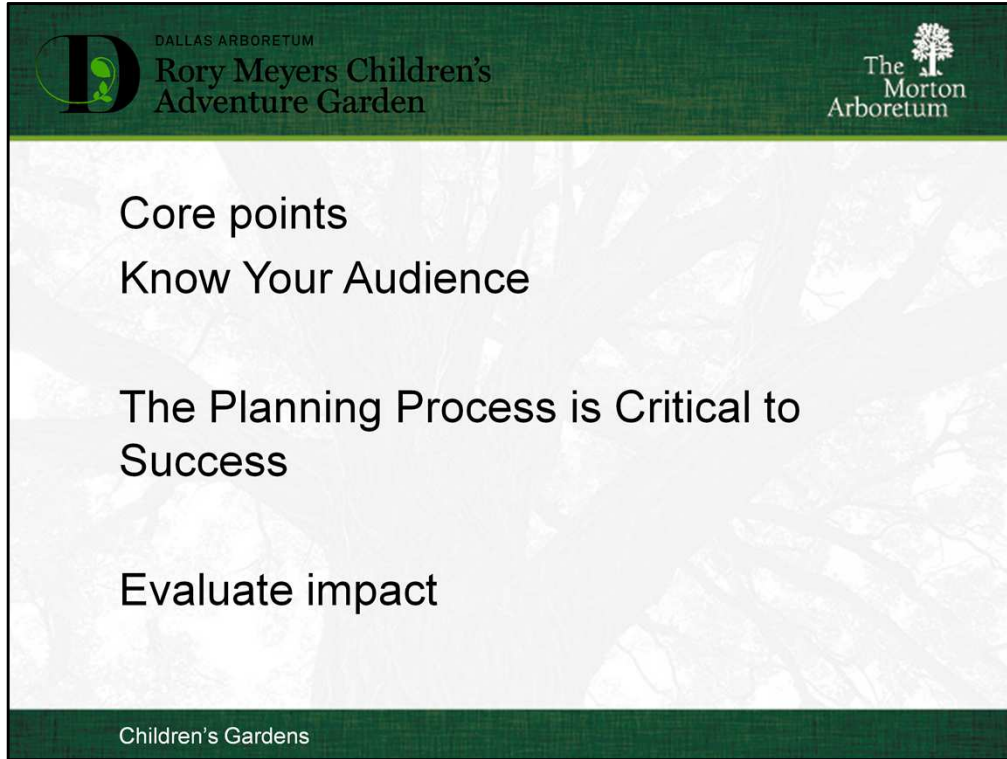
Are you planning to build a Family or Children's
Garden?

Goals:

To encourage family visitation
To introduce nature to children

Children's Garden

Discussion



The slide features a dark green header with two logos. On the left is the Dallas Arboretum logo, which includes a stylized 'D' with a green plant inside, followed by the text 'DALLAS ARBORETUM' and 'Rory Meyers Children's Adventure Garden'. On the right is The Morton Arboretum logo, featuring a tree icon and the text 'The Morton Arboretum'. The main content area is white with a faint background image of tree leaves. It lists four core points in black text. A dark green footer at the bottom contains the text 'Children's Gardens'.

DALLAS ARBORETUM
Rory Meyers Children's
Adventure Garden

The Morton
Arboretum

Core points

Know Your Audience

The Planning Process is Critical to
Success

Evaluate impact

Children's Gardens

Revisit



The Morton Arboretum has a long history of tree conservation and natural science education, notably through the hands-on natural science program developed in the 1940s by naturalist May T. Watts. Over the years, the Education program at the Arboretum provides learners the opportunity to access Arboretum tree knowledge and information, and provides experiences that inspire exploration, discovery, and connection to trees.

The Morton Arboretum's Education programs provide access to knowledge gleaned from leading experts in tree science, conservation and horticulture, and interpreted by highly qualified educators and interpreters.

Assets:

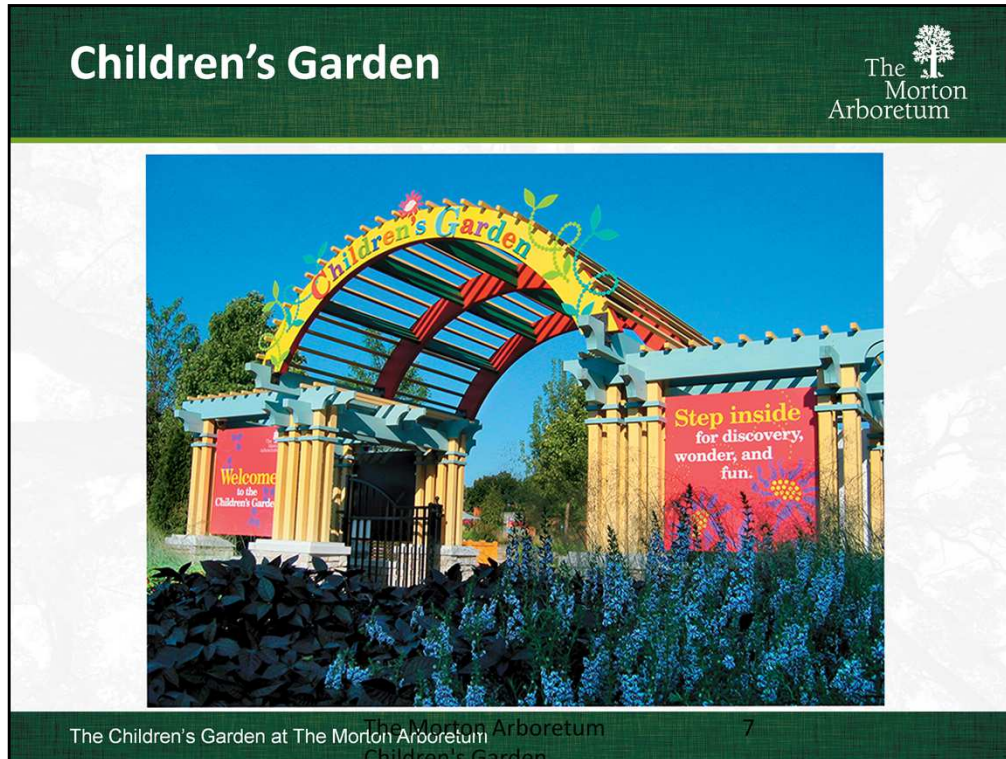
Master educators facilitate inquiry in the lab and field

Interpreters and designers interpret tree knowledge to create unique and memorable experiences

The Arboretum offers diverse habitats, living collections, and rich resources for nature play and exploration through the arts, plant and animal observation and study, best practices in gardening, and conservation and restoration action. The scientific expertise and current research being conducted at the Arboretum is the critical underpinning for these resources and can be shared with audiences beyond the physical site.

We are uniquely positioned to work directly in partnership with regional science education leaders, the Illinois State Board of Education, other national and global providers of tree science and conservation-based education to set the standard for and disseminate tree knowledge through defined STEM (Science, Technology, Engineering, and Math) initiatives, thereby providing pathways or opportunities for learners to gain deeper knowledge and greater affinity toward tree conservation. (fall in love with trees, learn more, take care).

The award-winning Children's Garden is a destination that engages/enables tree-centric nature play. . .



The 4 acre Children's Garden was developed and designed for the learning stages and development of children ages 2–10 and their caregivers. However, visitors of all ages enjoy the Children's Garden. The Garden is also utilized by horticulture, landscape architecture, and photography classes; tour groups; professional educators and other museum and public garden staff; and homeowners seeking garden design inspiration.

Q: What makes this Children's Garden unique?

A: Our focus on trees and the diversity of woody plant species represented make the Children's Garden unique. The Children's Garden is also a highlight of display horticulture at the Arboretum, with exciting, colorful, and seasonally varied plantings.

Know Your Audience

The Planning Process is Critical to Success

Evaluate impact

a brief overview of:

- the types of programming we offer for children and families in and out of the children's garden
- our youth volunteer program run through the CG
-



Key challenges for TMA
 connect to trees and nature
 Families/kids
 build attendance
 membership
 engagement move from attracted to affinitive
 team developed design brief before seeking vendor
 need more space for adult and child volunteers
 access to Wonder Pond, some parent/caregiver interp
 STEM program: MacGyvers,
 Treeschool programs family adventure programs
 nature play loose parts
 Tree House tales
 campaign
 reinforce importance of a plan and knowing your audience
 Evaluate your impact

How many people visit the Children's Garden annually?
 A: Approximately 350,000 visitors every year.

Q: What is the size of the Garden?
 A: The Children's Garden is four acres. If you walk all of the pathways, you will walk approximately one mile.

DESIGN AND PLANNING

Q: When did the Children's Garden open?
 A: The Children's Garden opened on September 10, 2005.

Q: Who designed the Children's Garden?
 A: A cross-functional Arboretum team guided and advised throughout the concept, design and implementation phases. Landscape architect Herb Schaal, who is well known for his award-winning educational children's gardens, was the primary designer. Hitchcock Design Group created schematic concepts, led design development, and produced construction documentation.

Q: How long did it take to build the Children's Garden?
 A: It took five years from the beginning of planning to the opening of the Garden. The first two years were concept development and planning, followed by three years to construct the Garden.

Q: How much did the Children's Garden cost to build?
 A: \$10 million prior to opening. This money was raised through the Arboretum's "Branching Out" capital campaign, which also funded the one acre maze garden, the Visitor Center, entryway to the Arboretum, an ecologically sustainable main parking lot, and restoration of Meadow Lake.



Guiding Principles of Design

Conceptual design supports the main messages in the Garden and teaches visitors about trees and nature; these basic content themes include:

- Trees that grow well in Northern Illinois
- Tree identification by leaf shape or other prominent features
- Parts of a plant
- Plant needs (sun, water, air, and nutrients)
- Tree/plant diversity
- Seasonal changes in nature
- Systems: Wetland, woodland, grassland habitats
- Animals that live in gardens and wooded areas

The Morton Arboretum
Children's Garden

9

What were the guiding principles/design criteria for your children's garden?

it is important to call out why an institution dedicated to science and conservation is also so invested in reaching thousands of young people each year. All of the work being done today to better understand and protect trees and other plants will one day rest in the hands of today's children. It is imperative that we share our passion and our skills so we can nurture those who literally hold the future in their tiny hands.

Conceptual Criteria

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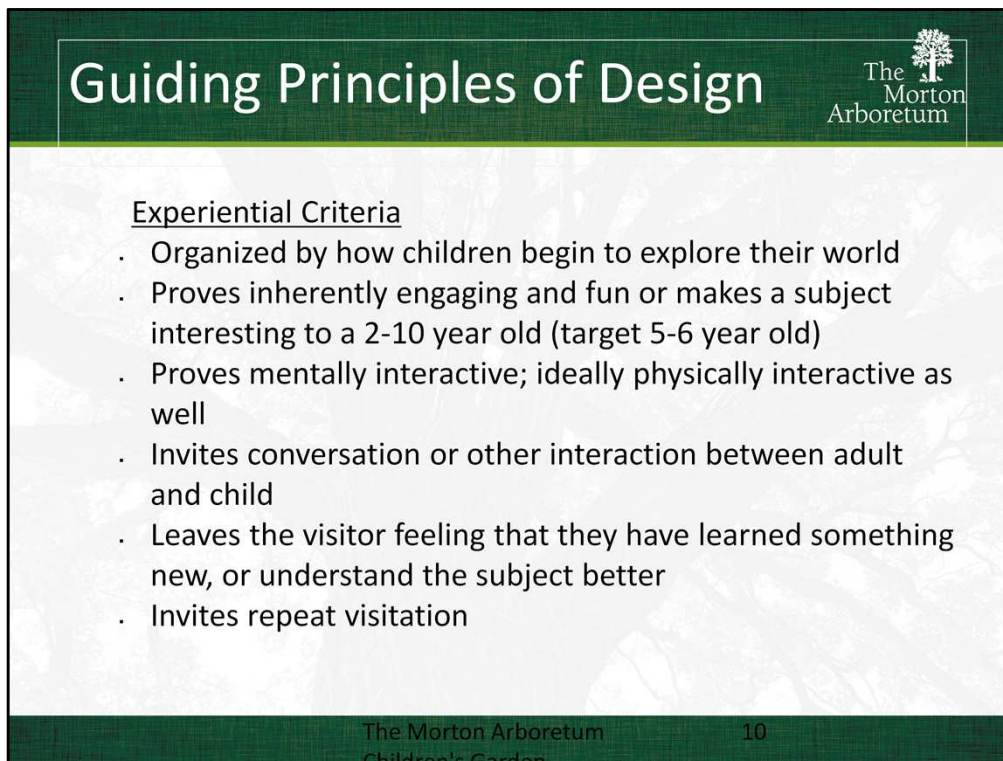
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- Wetland, woodland, grassland habitats
- Animals that live in gardens and wooded areas

Experiential Criteria

- Proves inherently engaging and fun or makes a subject interesting to a 2-10 year old (target 5-6 year old)
- Proves mentally interactive; ideally physically interactive as well
- Invites conversation or other interaction between adult and child
- Leaves the visitor feeling that they have learned something new, or understand the subject better
- Invites repeat visitation

Practical/Physical Criteria

- Fits into the setting and limited space
- Reflects the existing overall aesthetic of the Garden
- Holds up to outdoor weathering and heavy use by visitors (400,000/year)
- If it cannot withstand winter, then it can be conveniently removed and stored
- Accessible to young children
- Any moving parts or other parts subject to wear can be easily replaced by non-technical staff



Guiding Principles of Design

The Morton Arboretum

Experiential Criteria

- Organized by how children begin to explore their world
- Proves inherently engaging and fun or makes a subject interesting to a 2-10 year old (target 5-6 year old)
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The Morton Arboretum
Children's Garden 10

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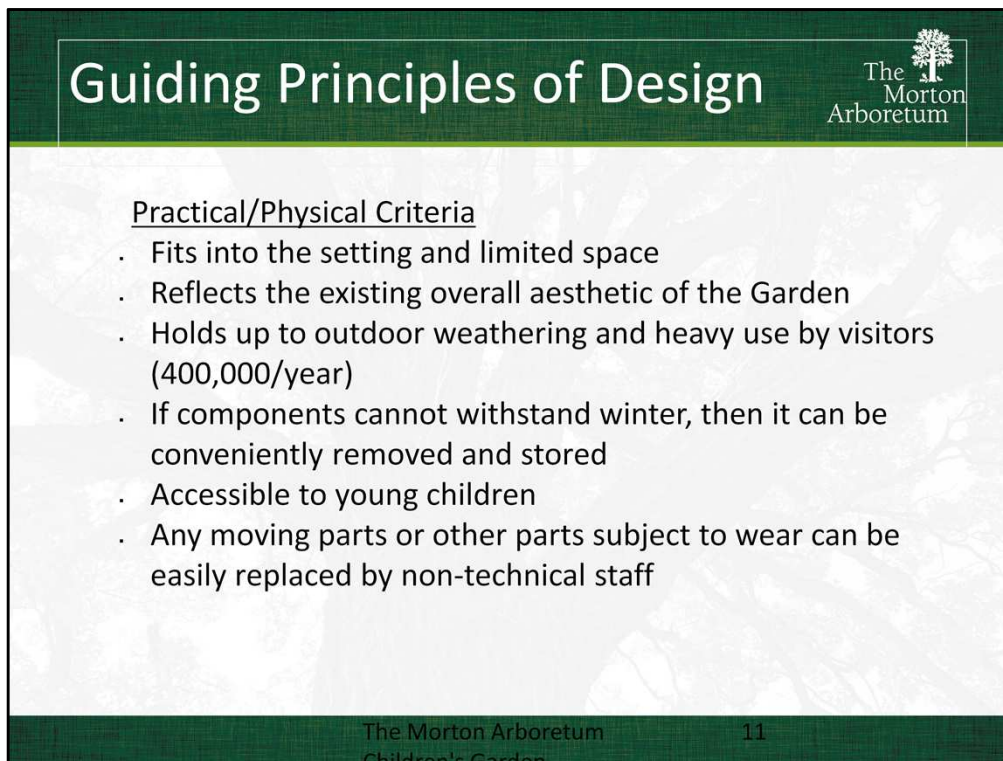
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The Morton Arboretum

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The Morton Arboretum
Children's Garden

11

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- Evaluate

How do we know what works and what doesn't?



The importance of knowing your audience

How do we know?

Evaluation study: understand impact of content and interpretation, the physical layout, and program impact

Q: Is there an area of your children's garden that did not prove popular with children, and did you replace it something else? If so, what?

We conducted two full evaluations in 2008 and are still implementing key changes to improve the level of child and caregiver-child engagement. Interpretive signage is not utilized as much as we had hoped, and we are revising content and placement to facilitate parent/child interaction.

Q: Where did you save money where you shouldn't have?

Not developing our indoor office and program space more fully to accommodate staff and supply growth as well as year-round classes and revenue-based programs such as birthday party rentals.

Q: What would you do differently?

Our picnic area offers shade by a large tent like structure held up by metal rods. This area offers a bit of protection from rain, but not in cases of severe weather (lightning and thunder.) In the future, we hope to create an area that would serve as shelter in inclement weather. Adventure Woods was built with too many safety issues that needed expensive retrofits within a year of opening. Also, there was too much emphasis on natural wood – furniture and trash containers – which over time have failed. Some of the exhibit elements in the Backyard Discovery Garden never did work and are now just coming out, such as the seed dispersal area. We would design for the long haul (10 years+) and reduce the need for extensive maintenance on the structures, finishes, etc. We would use only US/locally manufactured components -- not German made pumps and other features that require repair parts to be sourced and sent here.

recommendations do you have for someone planning their own Children's Garden

A: Establish objectives for the visitor experience you are trying to achieve. Visit other gardens and exchange information with peers to identify what works well and what could be different or better. Conduct focus groups with your audience. Evaluate programs and experiences on an ongoing basis. Some specific insights from us are to design your paths and walkways to accommodate regular and wide strollers, and winter snow removal (or other climate appropriate weather responses). When working with children and the outdoors, it is very difficult to make exhibit components indestructible. We've had more success with designing components that are easy to repair or replace. While we love our outdoor discovery rooms and use them heavily, indoor programming space would be a useful component of a Children's Garden.

Program tracking

The Morton Arboretum conducts evaluations of the Children's Garden in an effort to monitor and continually improve the visitor experience. Evaluators use a variety of methods including unobtrusive observations and interviews to study how the garden is being used and what visitors are gaining from their experiences.

Results have shown an outstanding 98% satisfaction rating from visitors who said that the Children's Garden successfully helps children learn about nature through play and is appealing to both children and adults.

As a whole, the Children's Garden successfully engages visitors physically, emotionally, socially, and cognitively. The Children's Garden offers two kinds of child-caregiver dynamics: child and caregiver interaction, and child exploring independently from the caregiver. Both experiences are developmentally important for children.

Garden areas where children have the most direct contact with nature (Wonder Pond, Secret Stream, and the Growing Gardens) elicit high degrees of experimentation, conversations about nature, and observations of natural phenomena, very successfully supporting the Arboretum's mission to promote connections with nature.

A few areas of the garden have been identified as less successful than others and these have been targeted for improvements. Recommendations were made to address specific problems and include adding interpretive labels, improving way-finding strategies, revising some features, and redesigning other features.

Minor low-cost adjustments, including improvements to interpretative messages, have taken place. More significant changes recommended in the report are being planned with a fundraising campaign, and will occur later.



- Trees that grow well in Northern Illinois
- Tree identification by leaf shape or other prominent features

What type of water features do you have, if any?

- Pond with shallow water stepping stones on one side, and 4 ft depth (with shallow shelf on edges) on the other side to allow plants and animals to survive winter conditions. The two areas are visually separated by a boardwalk.
- Interactive man made stream with movable stones
- Kugel Ball fountain in the main plaza
- Two-tier tropical water garden
- Interactive “spitting frogs” fountain

Here is one example. The leaves engraved into the granite kugel ball can also be found with their identifying names on the concrete surrounding the ball, which adds a layer of discovery.

Our water features are the most popular, especially our pond and stepping stones. When we are in peak school field trip season, there are often times when this area seems overwhelmingly full of both school groups and family visitors, each with different intent. We have limited the age of school groups visiting the garden to 3rd grade and under.

Exploring plants, roots. . .



The Children's Garden at The Morton Arboretum

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Exploration of roots, soils, programming space

Plant needs (sun, water, air, and nutrients)

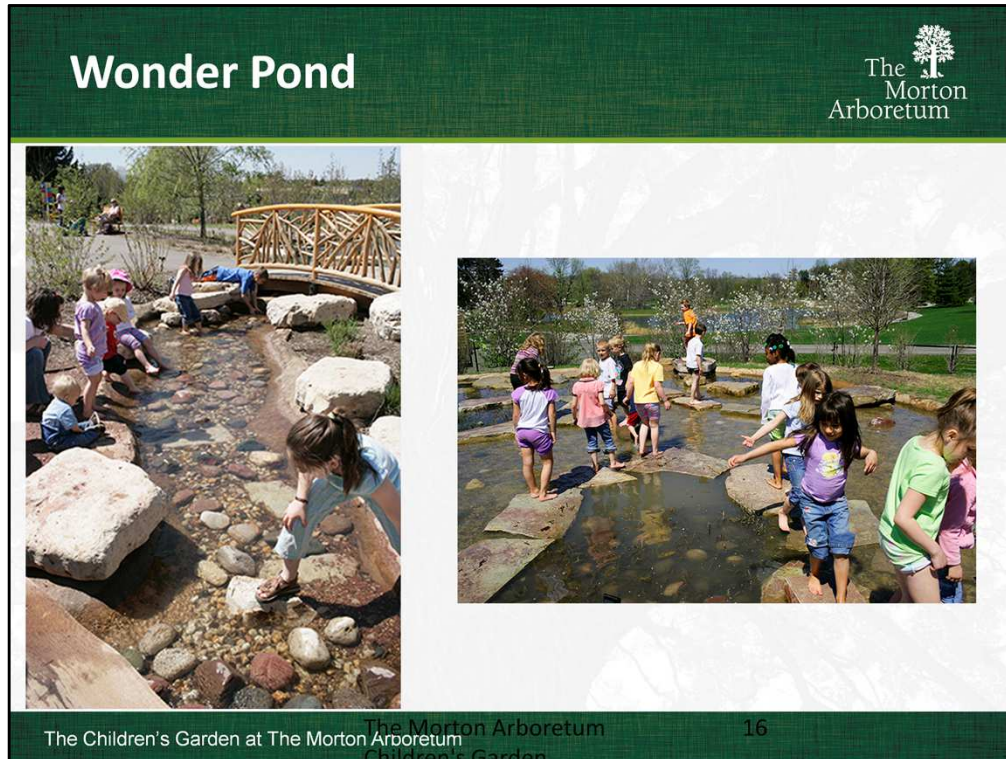
Seeds, Seed dispersal, pollination



The Children's Garden at The Morton Arboretum

15

Parts of a plant



- Seasonal changes in nature
- Wetland, woodland, grassland habitats

Water, water, water! Our water pumps, Wonder Pond and the Secret Stream are some of our most heavily used features. Evaluation data also reveals that these features, particularly Wonder Pond and the Secret Stream encourage the most independent exploration and form the most lasting memories in children visiting the Garden. Our Every Which Way Garden, which includes playground-like root structures and a sand play and water table area is also extremely popular, as are our treehouse structures (our Under the Trees area and the Canopy Walk on our Evergreen Lookout).

Here you can see wonder pond, which we also visited, filled with curious children and families balancing, splashing, and searching the water for signs of life. Risk-taking.

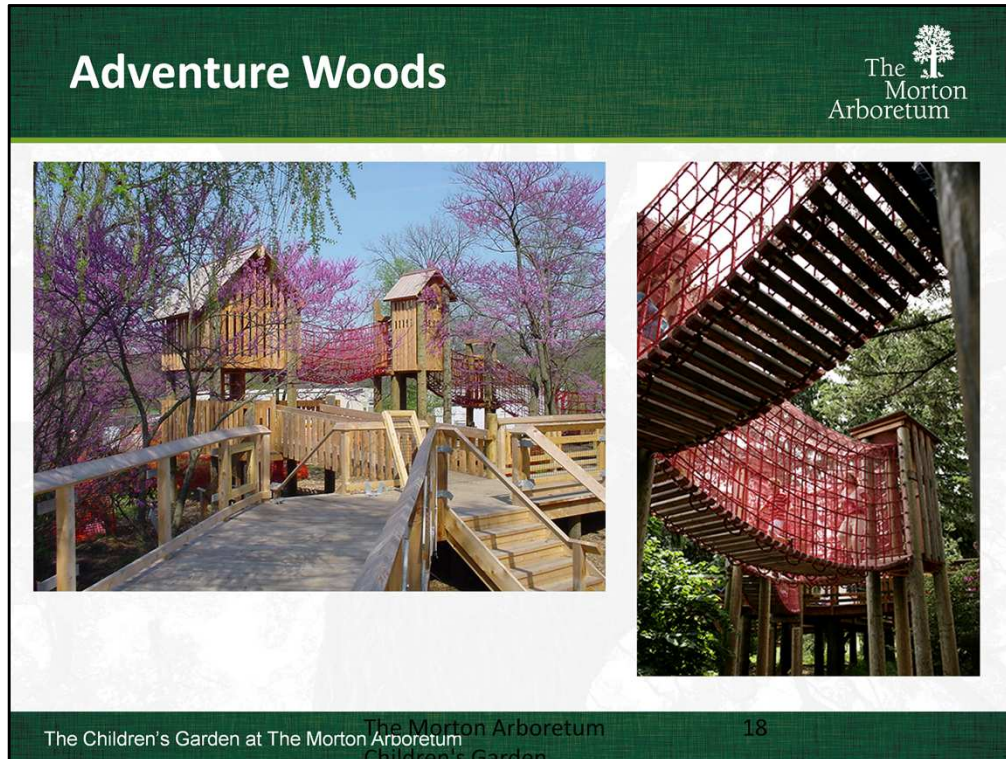
The tadpoles in wonder pond are an annual attraction for families. With so much interest in the pond, we took the initiative two years ago to use an underwater video camera to capture the tadpoles that emerge each spring. We posted the video on YouTube, which you can see here, and each year place a sign with a QR code for visitors to use to link to the video while visiting the pond.



Exploration, risk taking

Water feature didn't meet goals

Focus on exploration, nature play



- Animals that live in gardens and wooded areas

Experiential Criteria

- Proves inherently engaging and fun or makes a subject interesting to a 2-10 year old (target 5-6 year old)
- Proves mentally interactive; ideally physically interactive as well
- Invites conversation or other interaction between adult and child

The Children's Garden Program



Tree awareness

Understanding

Action







Education and Information

1

The CG Youth and Family Program is evolving

Our goal is to provide entry points to tree discovery, understanding, and action by providing learning opportunities that are:

Tree-centric placed in context of system

Unique to The Morton Arboretum

Grounded in Morton Arboretum expertise

Relevant to current audiences as understood through current member research

Relevant to future audiences, taking into consideration the psychographics -- the lifestyles and decision-drivers -- for target audiences comprised of Generation X and Millennial Generation members

Authentic problem-based experiences

Designed to attract funding and recover costs

If we intend to meet the goals set through the strategic plan, we need to determine:

Who is our target audience?

How has the needs of this audience changed in the last few years?

Through which channels do these audiences expect to access knowledge and information?

how do we know when we have impacted the audience?

Audience and needs have changed over the last decade. As generations grow older, new generations move front and center, creating the need to look at not only what they value about trees and nature, but what motivates them to learn and to think differently about caring for trees.

Youth & Family Programs






- Toddler & Preschool: Immersive nature-based classes for 18-35 month-old and 3-5 year-old children
- Acorn Express Adventures
- Tree-pose Yoga

The children's garden is a location for different types of programming as well.

Preschool and toddler classes are four week sessions that explore different facets of trees and nature in an accessible way for families, such as Darting Dragonflies, a sensory based program where children investigate the lives of the fastest insect in the world through outdoor exploration and play.

Acorn express adventures is a relatively new offering. It's a winter reading program for young children that includes an brief outdoor experience and uses our library as an indoor location. Many participating families return each week. This program, which you can see here, runs twice a week and takes families on a tram excursion into our collections and natural areas where they are able to get off the tram, explore a topic in more depth (you can see our program assistant holding a turtle in to image), and create a take-away item associated with the learning goal. It turned out to be quite popular and we welcomed more than 600 participants over the course of last season.

We also offer a number of other family programs such as a tree pose yoga class for children ages 4-6 designed to help make connections to the natural world through poses that include trees and stretching, moving, and breathing like the creatures around them.

Youth & Family Programs



- Drop-in programming
- Family adventures
- Family campouts
- Family science camp

A number of programs are available each week without registration, such as an open nature craft area in the children's garden where families can explore different themes each week. Some of our most popular programs require advance registration. These include family adventures that provide experiences outside the garden for families.

Family overnight campouts within the children's garden have become incredibly popular and reach capacity each time they are offered. We are finding that families are seeking opportunities to have memorable experiences together with children of multiple ages.

New this year is a family science camp day-long program to engage all members of the family in nature observation.

Youth & Family Programs



The Morton Arboretum Children's Garden

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Youth Volunteer program: Macgyvers

The Morton Arboretum

Gardeners work with horticulturists to plant, harvest, and four of the Children's Garden Growing Gardens.

Naturalists interact with Children's Garden guests and facilitate interactive Activities.

2013 Naturalist Macgyvers interacted with approximately 56,000 visitors to the Children's Garden



The Morton Arboretum
Children's Garden

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Within the children's garden we have a youth volunteer program known as Macgyvers which stands for Morton arboretum children's garden youth volunteers.

Since 2006, 245 students

Students select one of two tracks. REVIEW SLIDE

The program is designed to benefit the students as well as our visitors.

- 92 students

- 2,882 volunteer hours

- 82% returning students from 2012

Macgyvers – Working with Arboretum Scientists



Naturalists develop skills in:

- Public speaking
- Early childhood education
- Environmental interpretation

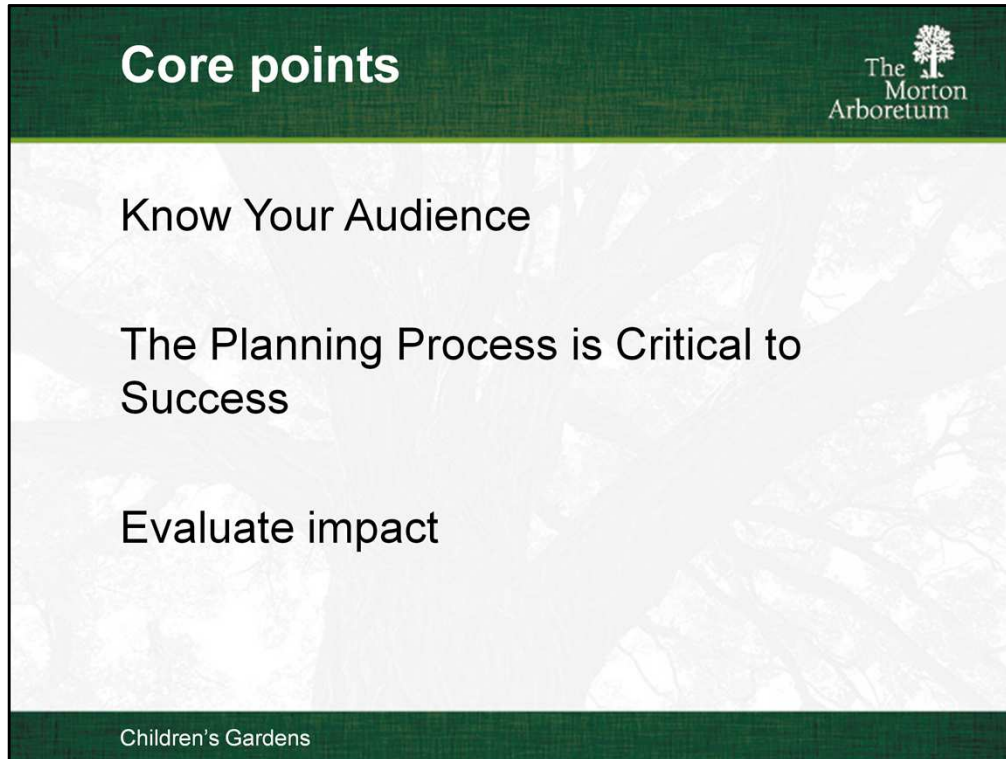
Gardeners develop skills in:

- Soil management
- Garden design
- Plant selection
- Harvesting edible plants
- Pest control
- Ornamental gardening



The Morton Arboretum
Children's Garden

24



Core points

The Morton Arboretum

Know Your Audience

The Planning Process is Critical to Success

Evaluate impact

Children's Gardens

Revisit



The Rory Meyers Children's Adventure Garden began 18 years ago with a subcommittee of our Board of Directors tasked with recommending if the Arboretum should use some of its undeveloped land to build a Children's Garden. The committee began by researching other Children's Gardens in the world including visiting most in the US. The committee recommended that the Arboretum build a Children's Garden (CG) but it needed to meet a need in the City of Dallas and be something that the Arboretum could do with excellence. When the Education Department began 16 years ago, the first major project was to develop a temporary Children's Garden to build an audience with this group and also to use as a formative evaluation.

Texas Pioneer Adventure



The temporary Children's Garden was called Texas Pioneer Adventure.

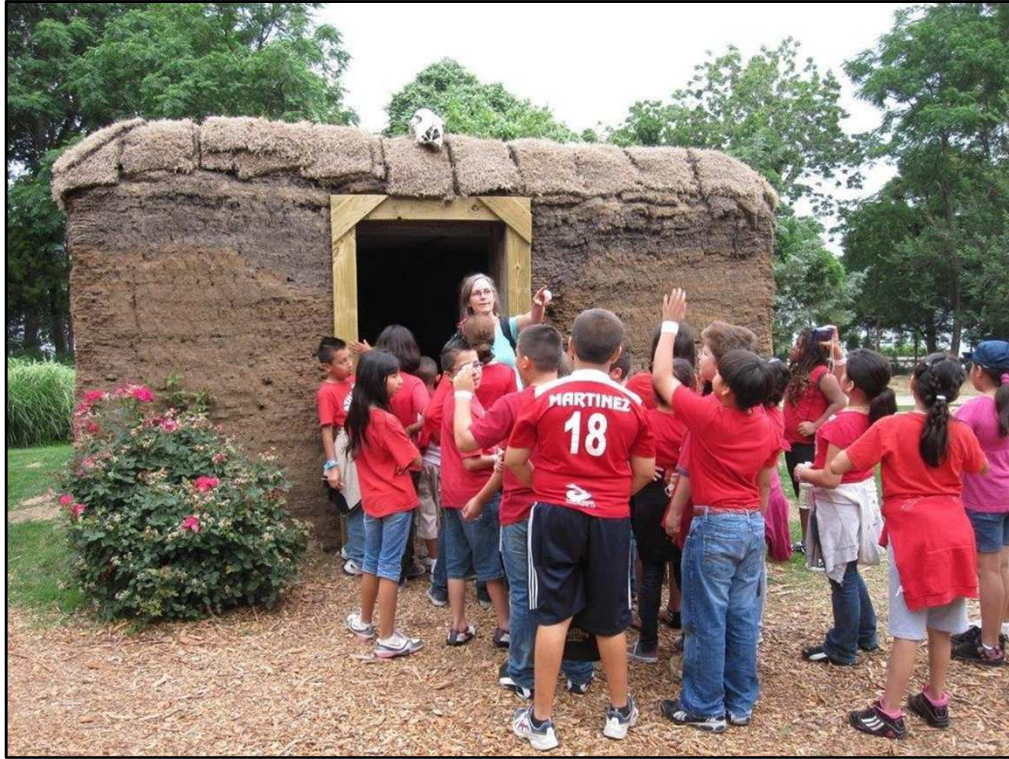
It was the integration of science, social studies and language arts, built around the pioneer history of Texas.



The Native Americans were the first to live on this land and they were hunters and gatherers.



This was a very immersive program with active participation, creative play



Teacher led classes as well as self-guided,



Showing the progression of the pioneers over time.



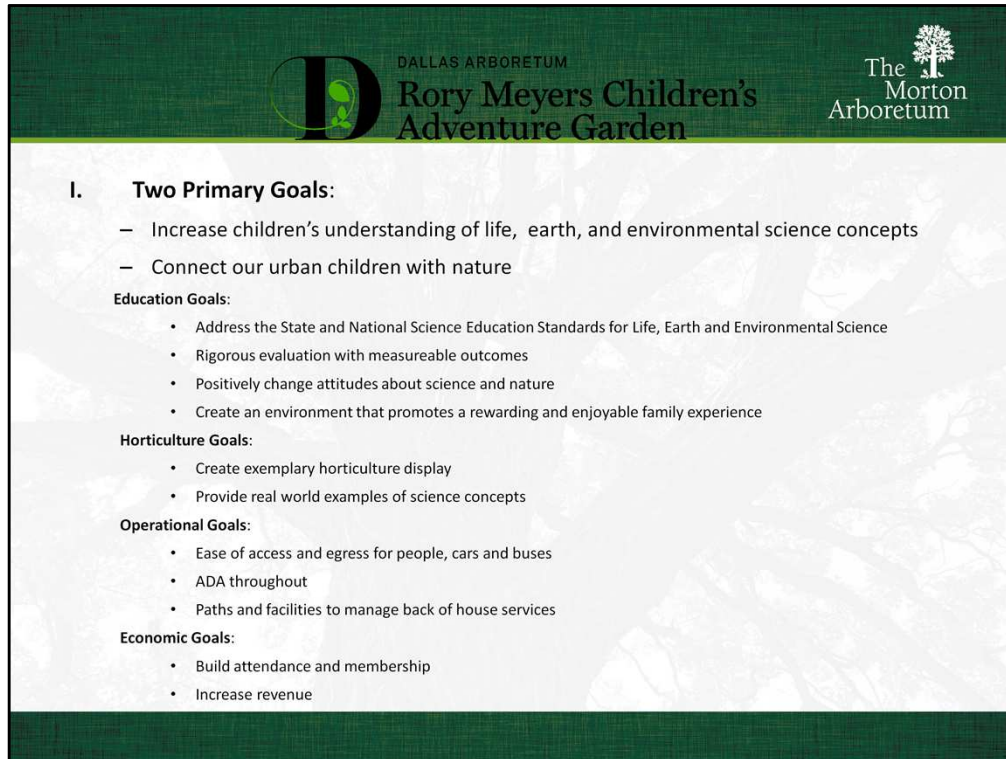
Gardens were developed that included medicinal, herb, vegetable and useful plants. The children went on garden hunts for the plants that would solve pioneer needs.



They also worked in the crop garden, plowing and trying out old farm machinery.

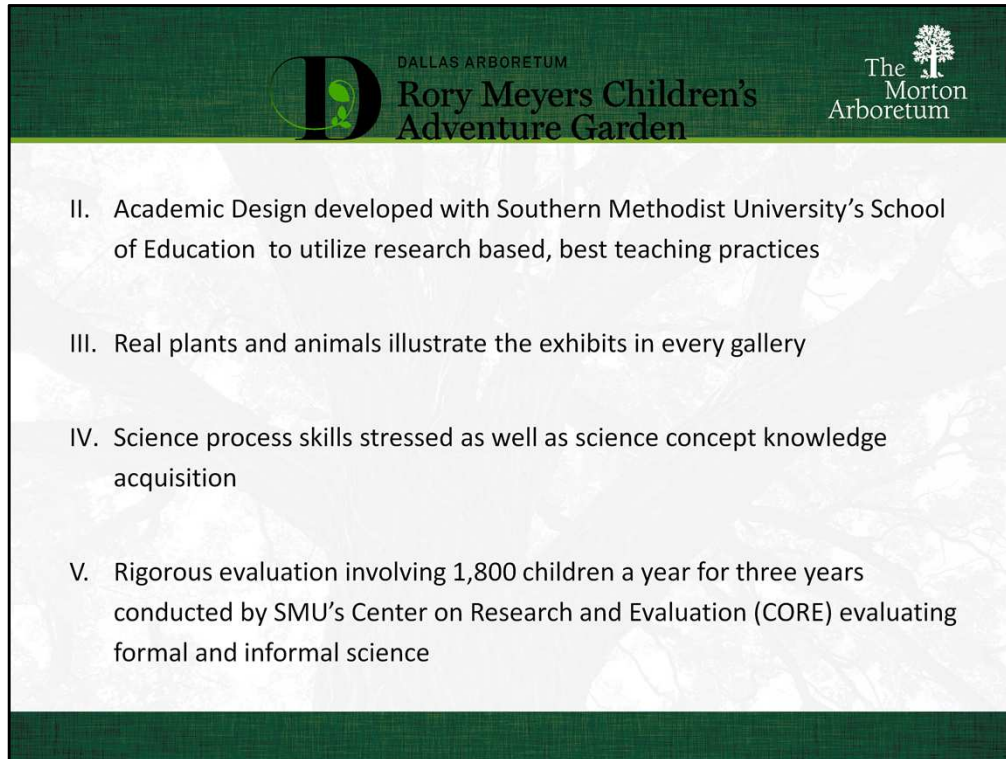
The garden was a favorite with all ages. Our family memberships increased dramatically and we learned a lot about what children knew and did not know about plants, how important they thought they were and how they felt about them.

We also learned how destructive Texas weather and children could be.



All the while we were researching other gardens, children’s zoos, nature centers and aquariums to learn what worked and what didn't. We went on many visits around the country and to conference sessions devoted to Children’s Gardens.

Finally we wrote a 34 page program document outlining what we wanted our Children’s Garden to be.



Then we wrote an RFP, interviewed and hired a fabulous team – a Dream Team.

This Design team made up of:

Van Sickle and Rolleri – Exhibit Designers

MKW & Associates – Landscape Architects

Dattner Architects

And our own key staff worked together for ten years on every aspect of the garden. Great communication and a team focus on the goals made this a very successful and creative working relationship.



The Planning process was so important to success.

- Know your Audience
- Know your community needs and wants
- Which of those needs can you fulfill with excellence?
- Use your goals as the filter to determine what to include – you cannot have everything.
- Make sure you have solid goals with measureable outcomes.

As we developed the programming, we also formed a **Curriculum Advisory committee** and a **Scientific Advisory Committee** to advise and review.

The process was critical.

These are the entry Gates to the 8 acre Rory Meyers Children's Adventure Garden.



Area for toddlers to Kindergarten age to play in nature with nature.
Play is a child's work.



Potting shed with activities led by docents.

Soft Science – for example, all sculptures a “anatomically correct”.



Pretend vegetable and flower planting and a plant petting zoo nearby

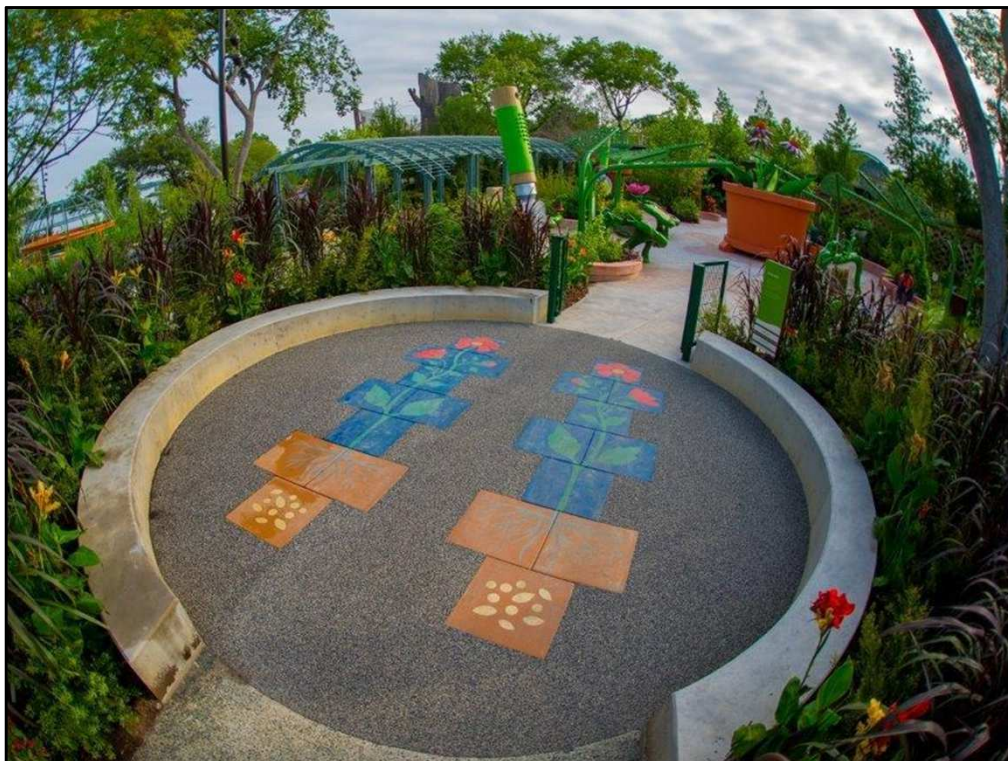




Mockingbird nest with eggs for hatching.



Turtle Creek with water play and lily pad bridges.



Plant parts hopscotch to a Giant Outdoor World.



Teaching station for a demonstration lesson on functions of plant parts and how they work together.



12 interactive exhibits that reinforce the jobs of plant parts. This is the Build a Blossom exhibit.



Life Cycle station where children stamp their own life cycle strips and then put them in the zoetrope to see them “grow”.



LED lights show the path of water from root hairs in the “ground” up the stem to leaves and on to flowers.



Kaleidoscope Gallery for six through 13 year olds integrates math, science, art and architecture.

It is the world of patterns, shapes and structures.



Designing and building a parterre garden by designing it on a graph and then building it.



On the right, tessellations, symmetry and pattern stations. At the center and left is an engineering station where visitors build structures using what they have learned about plant structures. Throughout the gallery, the plants illustrate the patterns, structures and shapes the exhibits are illustrating.



The focal point is the Eagle's nest.



Habitats must provide food for living organisms. The Zoetrope exhibit illustrates birds feeding their young in the habitat.



Nests of animals living in the habitat. Different nests built by different animals to meet their needs, built with materials from the habitat.



What is it like to scamper through the tree tops like a squirrel?



FUN!



Pure energy Tower – includes an elevator for our visitors.



Water blasters showing the power of water to make things happen.



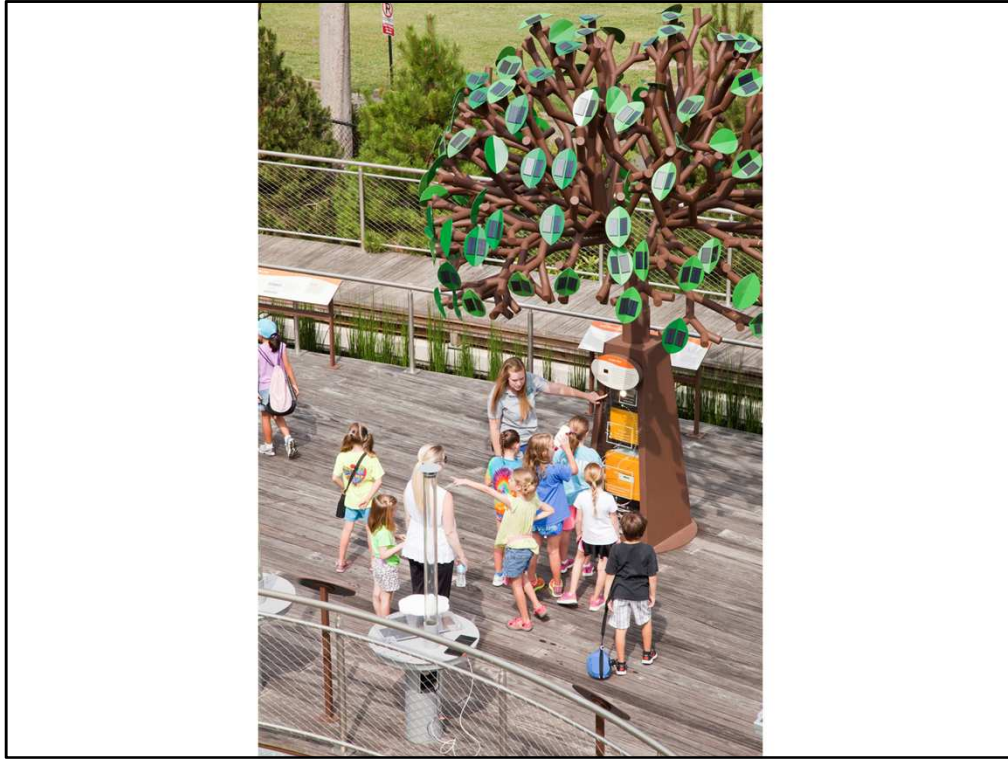
Water Island – learning how to transform the force of water into electricity. Very active play with an Archimedes Screw, dams to manipulate to change the water's pressure, 3-D models of water turbines.



Height and width changes change the speed of the turning turbines and the amount of energy produced.



Water weight and pressure



Solar Island – Learning how to transform the sun’s energy into electricity. The solar Tree and Sun and Shade exhibits.



Different solar panels for different purposes.



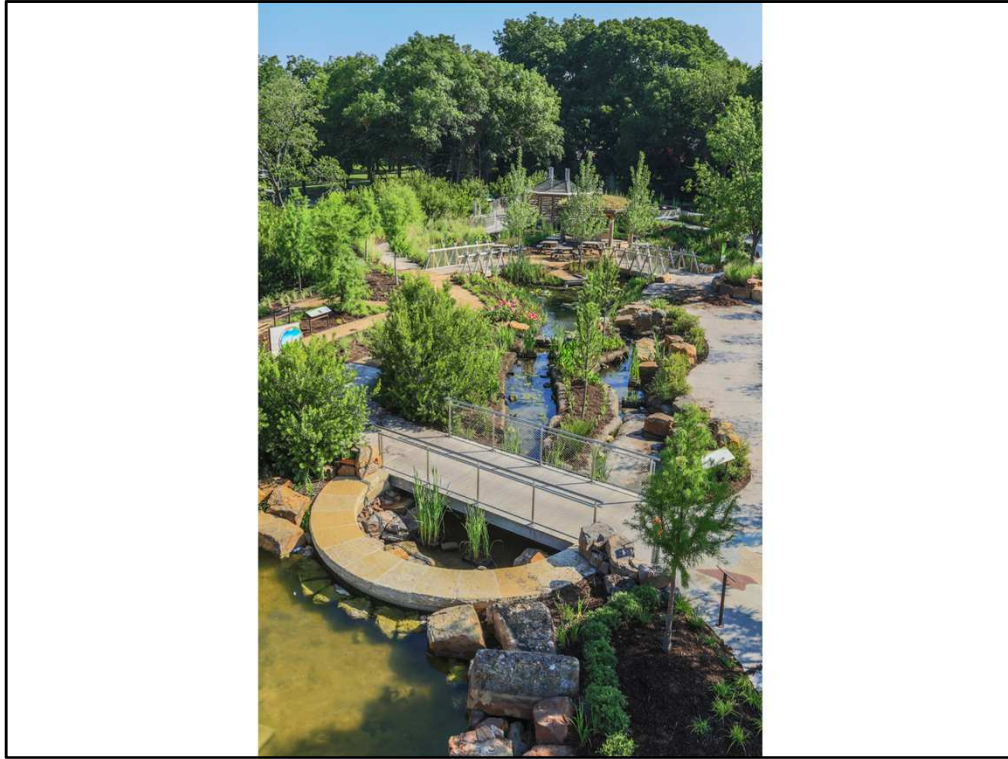
Wind Island includes anemometers and 3-D models of real wind turbines.



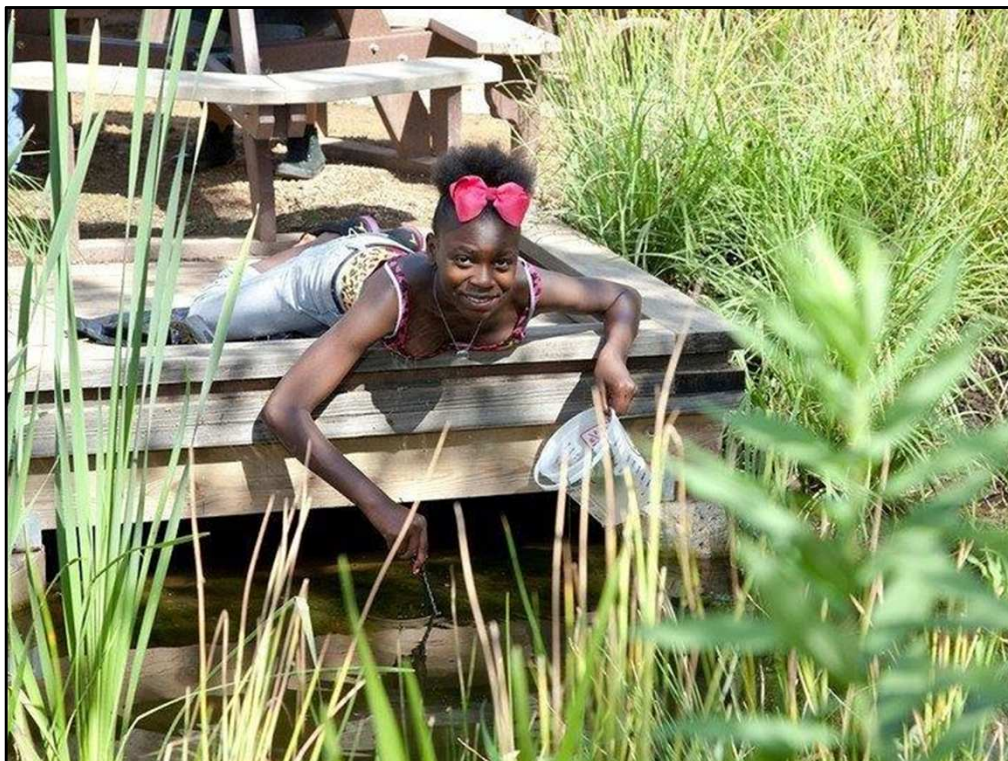
Learning how to transform the energy of wind into electricity which lights up the light bulb.



Giant Air-Zooka. Feel the force of the wind.



Texas Native Wetlands for five through 13 year olds is our largest gallery.



Pond dippings on the island docks.



What is in water that fish and frogs live in? What does it tell us about the water?



Exhibits along the wetlands trail illustrate adaptations and food webs



Boardwalks through grass tunnels



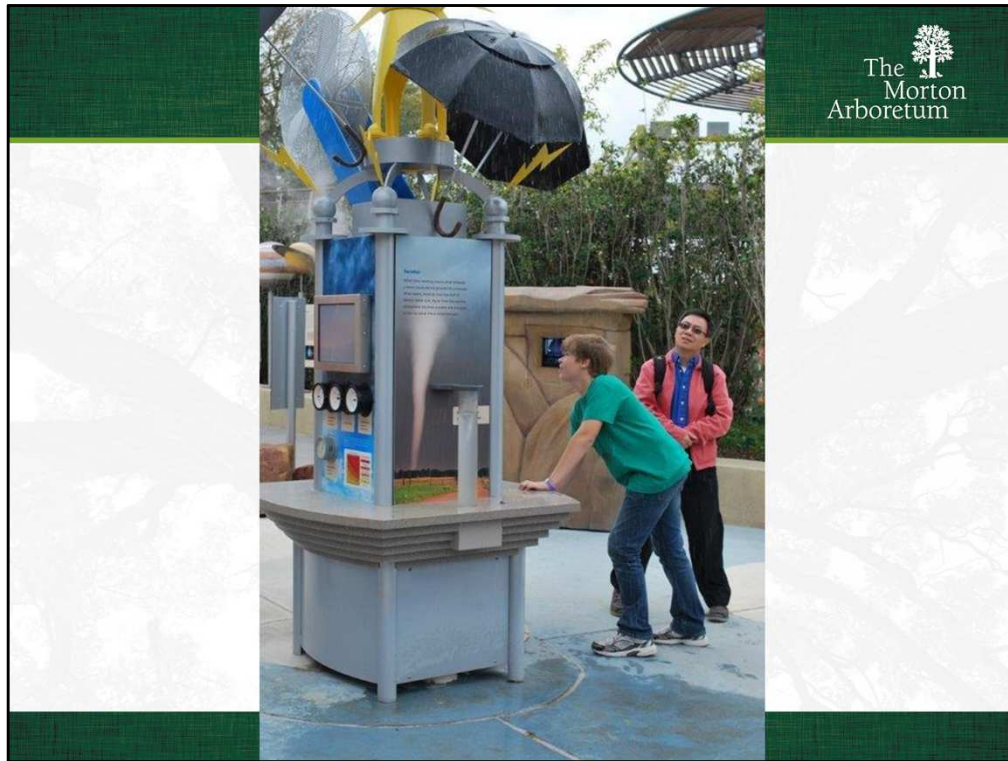
Earth Cycles Gallery for seven through 11 year olds – experiencing the erosion table



Soil samples of Texas at the back and one of three Rock Tables with hands-on activities with real rocks.



Plate tectonics and a Pangea puzzle illustrating Continental Drift.



The weather machine



Pick a Pollinator exhibit –Adaptations of plants to attract pollinators and pollinators to plants.



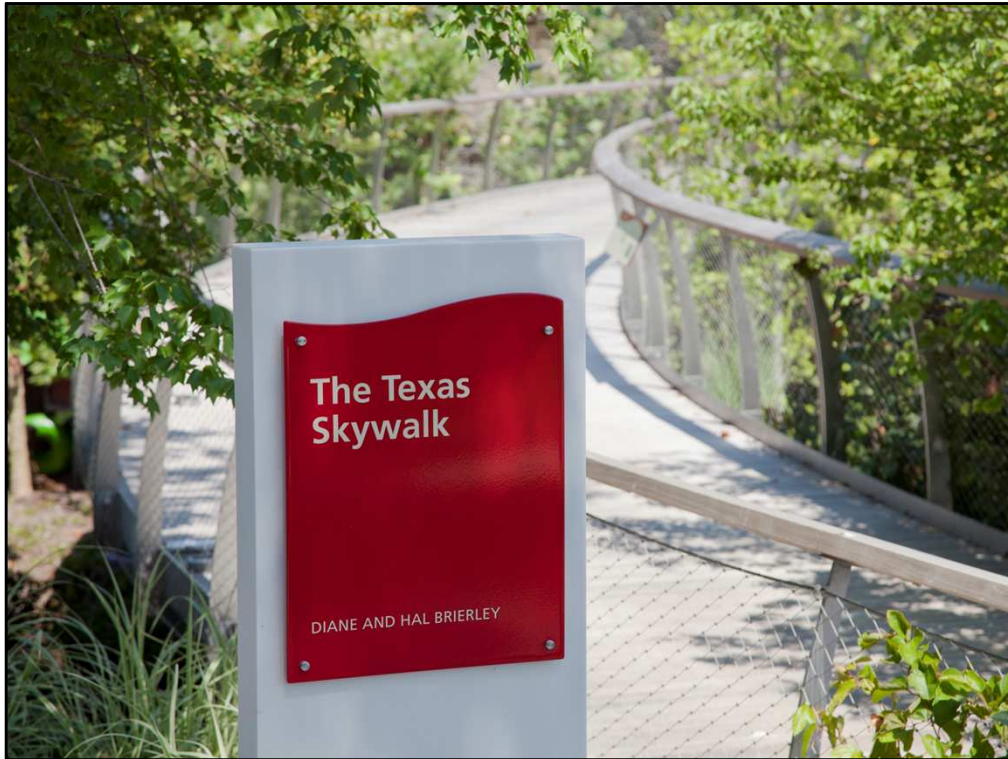
Metamorphosis – live hatching chamber for butterflies



Pond Ecosystem – How the plants, fish, amphibians, insects and sunlight all work together



Decomposition – Three compost bins showing three stages of decomposition on left and decomposers in the log on right



The Texas Skywalk – a walk through the tree tops



Who lives up here?



Telescopes all along the Skywalk along with tree identifiers.



Exhibits teach the many uses of corn on left; good nutrition on the right.



Eat the Rainbow color wheel encourages an easy way for children to determine if they have a healthy meal on their plates.



Cereal Garden in Incredible Edible

The grains are planted behind each cereal box.

We eat that?



Glove boxes in the soil Lab on left; Spin Browser video nature clips on right



A decomposing log – hunting for decomposers with a videoscope



CSI mysteries to solve.



The Plant Lab where all ages are invited to “do” science.



The Omni Globe – 5 foot sphere with 166 different programs to illustrate science concepts.



The maze has a King Arthur theme.



After walking past the fire breathing dragons, pull the sword from the stone and read the last clue to find the secret garden.



We also designed the Garden for adult activities. Situated on White Rock Lake with a beautiful sunset view of the lake and the downtown Dallas skyline,
This is a very popular spot for all ages.

SMU Center on Research & Evaluation (CORE)



Knowledge gains from programming for first – third graders

Table Four: Science First Average Pre-Post Knowledge Gain

Unit	Group	Average Gain	Standard Deviation	% Correct at Pre	% Correct at Post	Change in percentage points	Significance level based on ANOVAS
<i>Butterflies, Bees, and Blossoms</i>	Arboretum (n=301)	6.89	4.63	53.3%	87.7%	34.5	0.01
	Control (n=52)	2.12	2.87	61.3%	71.9%	10.6	0.01
<i>Planet Earth</i>	Arboretum (n=279)	7.51	4.35	39%	76.4%	37.4	0.01
	Control (n=53)	0.66	2.08	51.5%	54.8%	3.3	0.05
<i>Plants for Survival</i>	Arboretum (n=295)	6.54	3.80	46%	78.7%	32.7	0.01
	Control (n=57)	-0.25	3.53	56.1%	54.9%	-1.25	NS

Test Results from SMU's Center On Research and Evaluation show gains from science after school programming.

Each program lasts seven weeks and includes a pre and post unit test. The fifth column shows the gain or loss between the students in the program and the control group.

SMU Center on Research & Evaluation (CORE)



Knowledge gains from programming for third – fifth graders

Table Five: Science in Action Average Gain in Knowledge							
Unit	Group	Average Gain	Standard Deviation	% Correct at Pre	% Correct at Post	Change in percentage points	Significance level based on ANOVAS
Rock and Roll	Arboretum (n=298)	8.67	3.86	34.3%	77.6%	43.4	0.01
	Control (n=65)	1.86	3.34	44%	53.3%	9.3	0.01
Eco-Quest	Arboretum (n=258)	7.79	4.51	34.6%	73.6%	39.0	0.01
	Control (n=65)	1.43	2.28	34%	41.2%	7.2	0.01
Diversity of Life	Arboretum (n=276)	7.18	3.20	33.4%	69.3%	35.9	0.01
	Control (n=63)	1.57	2.37	38.2%	46.1%	7.9	0.01

Third through fifth grade gains over control group

Key Findings

- A total of 1,659 students and 50 of their teachers participated in either Science First or Science in Action after-school programming in 2013-14 and characteristics of the students indicate that the population targeted for services was reached.
- Students who participated in any of the Arboretum programming increased their science knowledge from pre-test to post-test at a greater rate than the control group who participated in no Arboretum programming.
- Among students participating in Arboretum after-school programs, the additional impact, or value-added, of a visit to the Rory Meyers Children's Adventure Garden can be seen in the students' pre-post achievement results. After only 60-90 minutes of exposure to the garden, students' Science knowledge scores increased more than students who only attended after-school programming.

A randomly chosen experimental group of students in the evaluation were brought to the Children's Garden during their unit for an emersion experience in the gallery that matched the unit's focus. This group showed significant knowledge gains over all other groups in the study after one visit to the Children's Garden.



DALLAS ARBORETUM

Rory Meyers Children's Adventure Garden

The Planning Process is Critical to Success

Developing or Redeveloping

- Know your audience
- Know your community needs and wants and which of these you can fulfill
- Set solid goals with measureable outcomes
 - How do we know what works and what doesn't?
- Use your goals as the filter to determine what to include
 - Stay focused - you can't have everything

Discussion



Research questions

Didactic vs experiential learning as the intended outcome

Longitudinal study of program impact on youth volunteers