

# LAKEHILL

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## PREPARATORY SCHOOL



**The Alice and Erle Nye Family Environmental Science Center**

# The Alice and Erle Nye Family Environmental Science Center

"When one tugs at a single thing in nature, one finds it attached to the rest of the world."  
- John Muir

## Overview

Lakehill Preparatory School's state-of-the-art LEED Certified Alice and Erle Nye Family Environmental Science Center offers laboratories, classrooms, and meeting space. With over 40 acres of untouched land to explore, Lakehill students have the opportunity to experience nature in a pristine, untouched environment.

Lakehill students began to make full use of this impressive facility in the fall of 2009. Students in Lower and Middle School visit the Alice and Erle Nye Family Environmental Science Center once every six weeks. A comprehensive scope and sequence has been developed for the Environmental Science Center for students in kindergarten through eighth grade. The science curriculum for each grade is thematic and concepts introduced will be built upon from one year to the next. An AP Environmental Science course is available to Upper School students.

"From an academic standpoint, the new facility provides our students opportunities to focus directly on environmental issues and careers. In addition to our regular science curriculum, the Environmental Science Program provides a special up-close study of nature that provides tremendous opportunities for our students," explains Lara Gajkowski, Assistant Headmaster.

The programs of the Alice and Erle Nye Family Environmental Science Center inspire students to become stewards of the environment by building awareness, furthering understanding, and leading students to make environmentally sound decisions based on their expanded knowledge of the world in which we live.

## Background and History

Located on Ferguson Road, Lakehill's seventeen-acre Roger L. Perry Campus is a perfect location to engage children in nature. With its graceful walkways, colorful flora, sweeping trees, existing creek, and pristine athletic fields, the property feels majestic and park-like, yet welcoming and calming. After breaking ground early in December 2008, crews began work on Lakehill's highly anticipated Alice and Erle Nye Family Environmental Science Center.

"The Ferguson Road property is the perfect setting for the new Environmental Science Center. Its existing creek, natural habitat, and proximity to the Dallas floodplains ensure an environment that will remain quietly tucked away in East Dallas," explains Headmaster Roger L. Perry.

The Alice and Erle Nye Family Environmental Science Center, which opened in September 2009, provides an extraordinary facility for students to study environmental science, biology, chemistry, and a host of other science offerings. Other courses such as math, art, history, and foreign languages will be taught periodically at the Environmental Science Center to tie in with the study of environmentally-related topics.

# The Alice and Erle Nye Family Environmental Science Center

## Why GREEN?

According to the U.S. Green Building Council:

- Buildings produce 39% of total CO<sub>2</sub> emissions in the United States and consume 76% of power plant generated electricity.
- All phases of buildings—building design, construction, materials and operation—consume more energy than any other part of the economy.
- School buildings represent the largest construction sector in the country.
- Green buildings save energy and water while lowering greenhouse gas emissions and waste output.
- “Green” schools use on average 33% less energy, save 32% more water, and reduce solid waste by 74% when compared with traditional school buildings.

The Alice and Erle Nye Family Environmental Science Center was one of the first facilities in the city of Dallas to achieve LEED certification. Though lengthy and arduous, the process to gain certification is certainly a positive step that Lakehill has taken to secure our environment for future generations. “When building the Environmental Science Center, it only made sense to become LEED certified. We did not want to spoil the natural beauty of the site and the long-term cost efficiency of the design made it a natural choice,” said Perry. “Good Fulton and Farrell did a wonderful job incorporating our vision into a working facility. It is a wonderful design and is truly a first-class facility,” added Perry.

# The Alice and Erle Nye Family Environmental Science Center

## Sustainable Design Strategies

The Alice and Erle Nye Family Environmental Science Center is dedicated to the study of the natural environment. The facility houses three laboratory classrooms, as well as a Great Hall that will be used as a gathering space for the school community. Set lightly in the natural landscape, the building adopts a number of strategies for connecting interior spaces with the world outside. Designed to meet the standards of LEED Certification for Schools, the building is responsive to its environment, using many strategies to enhance its natural surroundings and reduce its impact on the environment. Some of the sustainable design strategies include:

**Minimal Site Impact:** The building site is located on Ferguson Road in Dallas, on a previously undeveloped portion of a satellite athletic campus for Lakehill Preparatory School. The Alice and Erle Nye Family Environmental Science Center, located on the northeast portion of Lakehill's Roger L. Perry Campus, is nestled in a wooded area scattered with mature native trees and dense undergrowth. The site slopes towards a small creek, descending more than twelve feet over the length of the building. The laboratory classrooms and support spaces have been constructed at ground level, but a portion of the building is raised above the natural slope, reducing the disturbance of the site and allowing existing topography and surrounding vegetation and habitat to remain unspoiled.

**Views:** For a building dedicated to the study of the natural environment, it was important to establish a visual connection between inside and outside spaces. Extensive windows provide direct lines of sight to the exterior from every room in the building, bringing the outside in. Windows in the Great Hall at the far north end of the building provide treetop views in three directions. Almost 40% of the exterior walls are windows, with all of the glass being insulated and tinted. This combination minimizes heat gain, provides natural color rendition, and maximizes the transmission of visible light while blocking damaging ultraviolet rays.

**Generous Roof Overhangs:** Another strategy for connecting interior spaces with the world outside is the design of partially enclosed spaces to blur the line between inside and out. Deep overhangs on the south and west sides of the building provide protection from glare and solar gain, while creating usable outdoor space. A linear porch along the most public side of the building provides shade for the classroom windows and creates a sheltered path to the main entrance. Facing downhill towards the creek, a large covered deck creates an outdoor classroom and observation platform at treetop level. This deck also provides an overflow space for the Great Hall, allowing social functions such as Homecoming festivities and Prom to be directly connected with the natural world outside.

**Daylighting:** The long narrow footprint of the building, in combination with the extensive use of windows, allows daylight to reach nearly every square inch of the interior. As a result, daylight will provide most of the daytime illumination. Additionally, the lighting system controls are designed to save energy by providing only as much artificial light as needed to make up the difference on overcast days, or to meet the needs of specific activities. Bi-level switching allows users to set lights to 1/3, 2/3, or full power without the use of dimmers, which waste energy and create unnecessary heat.

**Local Materials:** Many of the materials and systems used in the Environmental Science Center building were produced and/or fabricated locally, thus saving energy by reducing the quantity of materials to be shipped long distance. The flagstone used as paving material in the plaza is quarried in the mountains of Oklahoma, and the brick used on the building exterior and the concrete used for foundations are from Texas. The structural steel, storefront framing, and metal roof were all fabricated within a 500-mile radius of the Lakehill campus.

**Awards and Honors:** The Alice and Erle Nye Family Environmental Science Center was honored in January 2009 at the United States Green Building Council North Texas Chapter's annual Member Extravaganza, an event dedicated to showcasing some of North Texas' finest sustainable building projects.

Lakehill Preparatory School is also a TXU Solar Academy and a founding member of the Green Ribbon Schools Program. Lakehill has been honored for the past three years for Excellence in Environmental Education by the Green Ribbon Schools program.

# The Alice and Erle Nye Family Environmental Science Center

## New Facility Earns LEED Certification

The Alice and Erle Nye Family Environmental Science Center has earned the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) certification for Schools.

LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

LEED certified buildings typically use resources more efficiently when compared to conventional buildings which are simply built to code. LEED certified buildings often provide healthier work and living environments, which contribute to higher productivity and improved student health and comfort. Green buildings are healthy for students, teachers, and the environment. Built right, green buildings are productive learning environments with ample natural light, high-quality acoustics, and air that is safe to breathe.

## What is LEED certification?

In the United States and in a number of other countries around the world, LEED certification is the recognized standard for measuring building sustainability. Achieving LEED certification is the best way to demonstrate that a building project is truly "green."

The LEED green building rating system ~ developed and administered by the U.S. Green Building Council, a Washington D.C.-based, nonprofit coalition of building industry leaders ~ is designed to promote design and construction practices that reduce the negative environmental impacts of buildings and improving occupant health and well-being. The hallmark of LEED is that it is an open and transparent process where the technical criteria proposed by the LEED committees are publicly reviewed for approval by the more than 10,000 membership organizations that currently constitute the USGBC.

The LEED rating system looks at five green design categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

# The Alice and Erle Nye Family Environmental Science Center

## Walking Tour

### Approaching the building:

- Walking up to the building along the sidewalk, you will pass an eight-foot tall waterfall.
- The waterfall connects to a three-foot wide, rock-lined brook, which is a football field in length.
- The four levels of the brook lead to the pond. The water is continually circulating from the pond to the waterfall and back.
- All of the pond water is natural water from the well system or from rain or runoff.
- No water has been purchased for the property. It is all provided by the natural impact of the land.
- Cross the metal bridge over the brook that leads to the patio. Lighted walkway.

### About the Nye Family:

- Erle Nye served on the Lakehill Board of Directors and was Chairman of the Board for many years. He remains on the Lakehill's Advisory Board.
- Alice Nye served as a volunteer at Lakehill for many years and was a substitute teacher for the School.
- The Nye's five children graduated from Lakehill.

### Surrounding the building:

- The patio is covered in Oklahoma flagstone from a quarry in the mountains of Oklahoma.
- The courtyard is 4800 square feet and blends in with the natural environment.
- The back of the building is at ground level while the front of the building sits at tree house level in the canopy of the trees.

### The Signature Tree:

- Red Oak, a tree native to Texas
- The tree was donated by Carolyn Ryrie Howard and Elizabeth Ryrie Anthony, honoring their mother Anne Vanberg Waldie.
- The tree provides natural shade; also provides a great sitting area for students.

### Up the Hill:

- Sitting area; five leuder rocks cut by a saw
- Flagstone on the ground; mondo grass
- Kids can sit on the rocks; teachers can hold class outside; or just sit and enjoy nature.

### South End of Building:

- Boys' and girls' restrooms outside; tennis team has access without having to go to field house.
- Bathroom tiles (the colors and pattern) are designed to look like falling leaves.
- Shower and sink facilities available if students need to rinse off or clean shoes after being in the woods.

### The Building (from back entrance):

- Classroom 3: Big display area for outdoor experiments and dissections.

- Classroom 1 and 2: More traditional science labs; cabinets with sinks at the end, SMART™ Boards.
- You understand when looking out the window how nature is brought indoors.
- Boys' and girls' restroom facilities
- Wired for the most advanced technology; if it exists, we have the technology for it.
- Conference Room: Table and desk
- Office/Teacher Work Area: Melissa Carpenter, Director of Environmental Education; a lot of closet space available

#### **Main Entrance:**

- Dedication outside on the wall: Alice and Erle Nye Family Environmental Science Center
- Plaques inside door: Board of Directors; Naming Plaque
- Portrait of Nye Family, taken in 2009

#### **Great Hall:**

- Storage/prep room for catering; room to store chairs and tables; sink area
- Room can be used for Homecoming, Prom, Valentine's Dance, Board and PFC Meetings
- Fireplace, with the school seal above made of anodized aluminum
- Bookshelves, will display some of the artifacts found on the site
- Double pane windows, argon gas in between panes; special green tint
- Pine ceiling, further incorporates the "tree house" feel of the room.
- Again, want to bring the outside in; look out into the canopy of the trees
- The building is designed to give the feeling of being in a tree house.

#### **Observation Deck:**

- Extends the Great Hall to further connect the building with the environment.
- Look out onto the trees and the ¾ acre pond.

#### **The Pond:**

- All of the water for the irrigation of property comes from natural sources (well or rainwater).
- Buy no city water for pond or irrigation; help the city conserve resources
- Water from the pond is piped up to top (for the waterfall), and re-circulates
- Dirt from the pond used to build the berm; planted with shrubs
- Crape Myrtle and native Texas Red Oak planted along the side of the building
- Water from the pond will water the entire 17-acre campus.
- When the pond level gets below 12", an automatic sensing device sends a signal to the well to refill the pond.
- Fountain in the pond, aerates the water
- Stocked with catfish, bass, minnows, frogs
- Future opportunity for catch and release fishing
- Tried to save all of the large trees, especially the large elm in the middle of the pond. It's a special 100-year old tree, so the pond was developed around it. This resulted in a pond in the shape of eyeglasses, instead of a circular pond.



### **Behind the pond:**

- Backs up to 43 acres of City of Dallas flood plain.
- Lakehill students have developed a trail system, 1/8 mile trail leads kids to a creek; the kids developed the rest of the trail.
- Four more acres available to explore to the right of the pond; many 200-year old trees.
- The area contains a plethora of large native trees, including American Elm, Ash (green), Box Elder, Chittamwood, Hackberry, Pecan, and Red Oak.
- Legend of the Red Hawk feather:  
When Lakehill was in the initial stages of developing the pond, Mr. Perry was out walking in the area on the top ridge. After seeing Red Hawks flying all morning, he found a beautiful Red Hawk feather at the site of the current pond. According to ancient Indian lore, the feather symbolized that we were building the right thing in the right place.
- The rock-lined brook will weave through the trees and flow into the pond on the left side, cascading from the top of the hill and the large waterfall over a series of four smaller waterfalls. The water is then pumped back up to the top. The area will also be planted with Crape Myrtle and native Texas Red Oak.

### **Idea for initial development:**

- We knew the environment was extremely important and that our role in studying and protecting it was becoming more important.
- Looking for a place for kids to spend more time out in the woods, experiencing nature.
- Mr. Perry initially thought maybe someone would donate a ranch.
- Found this property, had wells already on the property, chance to build a softball field and environmental science center.
- Initial plan was to build a \$250,000 State Park type facility of about 2500 square feet
- Over time, more and more things were discussed. Board of Directors decided to hire Good Fulton and Farrell Architectural Firm to draw something spectacular; this is the result.

### **Summary:**

- Building earned LEED certification (one of the first in Dallas).
- State-of-the-art use of the environment and energy.
- 6500 square foot building
- 2.3 million dollar building
- The greatest thing about the facility is not the building, but the idea that we can get kids out in nature, learning about and experiencing the natural environment, and that this is a legacy that will always be here for our children.

### **Economic Boost to Neighborhood:**

- Set the tone for neighborhood development. The few million dollars that we have spent here has stimulated about \$100 million of spending in the Ferguson Road area.
- The area continues to move forward. Government grants to other area businesses have been given because we have done so much already to improve the area.