Dr. Martin Luther King, Jr.
Charter School for Science and Technology
Lower Ninth Ward, New Orleans

The Learning Landscape Alliance:
Overview for Campus Improvements

University of Colorado at Denver and Health Sciences Center
College of Architecture and Planning
Department of Landscape Architecture
Spring 2007
The Dr. Martin Luther King, Jr. Elementary School for Science and Technology Campus will be a welcoming and sustainable hub promoting education, physical development, and play for the children and community residents alike. The school will act as a catalyst for revitalization while celebrating the cultural and historical richness of the Lower Ninth Ward and New Orleans, Louisiana.
DR. MARTIN LUTHER KING, JR. CHARTER SCHOOL FOR SCIENCE AND TECHNOLOGY
PRELIMINARY PROPOSAL FOR CAMPUS IMPROVEMENTS
A RESOURCE FOR THE STUDENTS, TEACHERS AND THE PEOPLE OF THE LOWER NINTH WARD, NEW ORLEANS

Prepared by Students at the
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Spring 2007

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Ensure the long term success of the school and learning landscape by actively involving the community and children in the planning, construction, and maintenance of the school grounds.
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Executive Summary: What is the Learning Landscape Initiative?

Since 1998, the Learning Landscape Initiative has transformed 46 neglected Denver elementary school yards into attractive and safe multi-use resources that are tailored to the needs and desires of the local community. These school yards have served more than 18,000 children, of which over 50% qualify for free and reduced lunch programs. The Learning Landscape Initiative, which represents an investment of more than $20 million, has been sponsored by a broad-based public-private partnership and directed by faculty and students from the Department of Landscape Architecture at the University of Colorado at Denver and Health Sciences Center. With a budget of approximately $450,000 per school yard, the University works with school officials, teachers, students and community members to design new school yards that respond to the culture and aesthetic tastes of neighborhood residents as well as the developmental needs of children.

Learning Landscape goals and design elements

The Learning Landscape Initiative sponsors the design, implementation and sustainability of innovative, multi-use school yards.

Each Learning Landscape has a composition of design elements that support the following goals:

1. To provide participatory landscapes that support children’s healthy development.
2. To develop multi-generational spaces for outdoor use by all members of the community.
3. To provide an aesthetically pleasing focal point for the community by creating a place that reflects the uniqueness of its location, activities, and users.

Common design elements:

- Community gateways
- Shady places
- Common areas for gathering
- Natural, wild and cultivated gardens
- Outdoor art
- Improved multi-purpose fields
- Improved hard surface games and educational elements
- Developmentally appropriate play equipment with improved accessibility and safety
- Creative play elements
Learning Landscape Project: Dr. Martin Luther King, Jr. Charter School for Science and Technology

Next August Dr. Martin Luther King, Jr. Charter School for Science and Technology (Dr. MLK, Jr.) will reopen its doors to the Lower Ninth Ward Community. This will be the only school to reopen in the Lower Ninth Ward and Holy Cross neighborhoods. Although the interior of the building has been gutted and completely refurbished there is no funding for much needed school yard improvements. The redevelopment of this school yard into a Learning Landscape is vital to a neighborhood with no other outdoor opportunities for group play and physical activity (all school yards, playgrounds and parks were destroyed by hurricane Katrina and are currently fenced off with no plans for redevelopment). We propose to plan, construct and evaluate the impact of building a Learning Landscape playground at Dr. MLK, Jr. As we have found in our work in Denver, Colorado, the process of planning and building Learning Landscapes transforms communities. Residents engage in a participatory design process that fosters new ideas and engenders a sense of ownership on the part of the community. The actual builds of the playground involves community members of all ages and requires minimal skilled labor.

Participatory Planning Process—In rebuilding after a disaster it is vital to create a participatory process in which residents have a voice in the direction of their community. The University of Colorado at Denver and Health Sciences Center (UCDHSC) has been working in partnership with the Lower Ninth Ward Community for the rebuilding of their neighborhood. Since developing this partnership, UCDHSC gained an understanding of the needs of the community as well as relationships with many key stakeholders. Its anticipated all neighborhood stakeholders including children will be invited to actively participate in both the design and building of the Learning Landscape playground. Local artists will...
also be invited to design artwork that can be integrated into the playground design. The outdoor environment will be designed to reflect the uniqueness of the location, activities, and users. As families return to the Lower Ninth Ward the planning process will address how children reflect on their environment. This process empowers children as they map, evaluate and make recommendations about their neighborhood.

The graduate students from the UCDHSC have been actively working with community members to create a design for the Learning Landscape at Dr. MLK, Jr. Charter School. We traveled to New Orleans on two occasions during the month of March 2007 to meet with stakeholders and get feedback on potential designs. Meetings were held with the Dr. MLK, Jr. Charter School students, as well as teachers, community members, and parents both at the temporary school site and on the Dr. MLK, Jr., Charter School grounds. These meetings served as a means for Lower Ninth Ward residents to give their feedback on the plans, as well as cement relationships between the community and the university students. The continuation of the participatory planning process is essential for the success of the project.

Participatory Building Process—While professionals complete the basic playground construction, community and student volunteers enhance the construction process and the quality of the playground. Volunteer dates for community builds will be set during the construction period. Community builds, involving people from the school community and other volunteer organizations are an essential part of the participatory process. Currently, it is believed the project will have between two to four volunteer builds in which the community creates artwork, plants gardens, lays sod and bricks and builds playground equipment.

KaBOOM, a national non-profit that provides playground equipment to low income neighborhoods has offered to work with the team to enhance the playground. Community members will install this donation on the playground during several volunteer days once the site preparation and soil amendment processes are completed on the grounds.

The development of the school yard has been divided into sections and phases to make the process simple. The sections are the Intermediate Play Area & Primary Play Area, the Central Gathering Place and Landscaped Pockets, the Courtyard of Science and Nature Hall of History, Greening of the Field and The Hills, and the Children’s Garden & Gateways. Each of these areas has a more detailed description, map, and photo montage contained in this packet of information. As stated earlier, constructing each section will be a participatory process that will involve community volunteers, graduate students and construction professionals.

Long-Term Sustainability—The stakeholder participation that is fostered during the design and building stages generates a culture of community stewardship that is essential for the long-term sustainability of the Learning Landscapes, a partnership shared between the university, the school, and the community. UCDHSC will assist in such tasks as forming partnerships to expand service learning opportunities, providing maintenance support and technical assistance to site based personnel, and seeking on-going funding to support the Learning Landscape.

The design for the Dr. MLK, Jr. school grounds will incorporate as many elements of environmental sustainability as practical. Students will tend an organic garden on the site, and learn about renewable energy through small-scale demonstrations of solar lighting, wind energy, and potentially hydro-powered pumps in a fish hatchery. These elements will be located within the school grounds.
courtyard where they can be closely monitored by staff. These sustainable elements will provide educational opportunities as well as slightly reduce the school’s energy consumption, with the ultimate goal of attempting to expand to a larger scale.

Community involvement in all phases of the Learning Landscape is essential for the continued success of the project. To maintain and continue to develop the school grounds, it is necessary for community members, as well as school staff, to take a strong interest in the project. If the school yard is allowed to remain open outside of school hours, community vigilance will help reduce or prevent vandalism and other crimes.

**Evaluation and Research**—This is an optimal opportunity to study the effects of this initiative on local communities and children’s healthy development. This includes an examination of the participatory process of the initiative and how this process can aid in disaster recovery, assessment of the Learning Landscapes on neighborhood social processes, (e.g., collective efficacy and social cohesion), and the effects of the playground renovations on children’s physical activity and prosocial behaviors.

Over the past year, Landscape Architecture students have been gathering data about the Lower Ninth Ward that will help to assist in a playground design that reflects the unique characteristics of the community. This information also provides a baseline assessment of the neighborhood. Furthermore, Tulane University has

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**Timeline for the Dr. MLK, Jr. Charter School Learning Landscape**

**Phase One A**

1) Remove and store covered walkway for future re-use  
2) Relocate entry gateway  
3) Remove fence  
4) Remove concrete parking lot  
5) Purchase church properties. Remove all debris and concrete

**Phase One B**

1) Multi-use field and track installation  
2) Preparation of “The Mountain Tops” for volunteer plantings

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studied children’s physical activity on the Dr. MLK, Jr. school playground prior to Hurricane Katrina. This information will allow us to evaluate the impact of the playground renovations on children’s physical activity levels.

Past research on the Dr. MLK, Jr. school grounds examined the effects of leaving the school yard open outside of school hours on children’s physical activity levels. The study revealed that leaving the school playground open positively influence physical activity levels, and thus potentially reducing the rates of childhood obesity. Continued research using the System of Observing Play and Leisure Activity in Youth (SOPLAY) method for observing and categorizing activities can be used to determine how the Learning Landscape reconstruction impacts physical activity levels. The new data can be compared to the baseline data from the Pre-Katrina study.

The redevelopment of the Dr. MLK, Jr. school yard into a Learning Landscape is an exciting opportunity that will help to revitalize the Lower Ninth Ward Community. In the following pages you will find the plans for the school, as well as written descriptions and photo montages detailing the different sections of the school yard. Additionally, you will find the proposed phases for construction and a summary of community involvement up to this point. Also attached are several appendices that outline past research and other information gathered by graduate students during the participatory process.

Phase Two
1) Volunteers prepare play pits and build play equipment
2) Volunteers plant “The Mountain Tops”
3) Central Gathering Area Constructed
4) Re-use and distribution of covered walkway
5) Bus Stop Construction

Phase Three
1) Paint Murals
2) Construction of parking lot addition
3) Construction of Pre-K area and children’s garden

Phase Four
4) Construction of ‘The Courtyard of Science and Nature’ and the ‘Hall of History’
5) Other Entry/Landscape Improvements
Executive Summary

The Dr. Martin Luther King Jr. Elementary School was severely flooded due to high water levels caused by breaks in the Industrial Canal due to Hurricane Katrina. As a result of Hurricane Katrina and the severe flooding everyone living in the Lower Ninth Ward in New Orleans was forced to relocate. Despite the damage, the school building itself has been found to be structurally intact. Children, faculty, and staff have been temporarily relocated to another facility, but are scheduled to return this fall in 2007. Slowly, there are signs of people moving back into the community such as home rebuilding and retail stores reopening.

Community Support and Volunteers—Parents are actively involved with the Dr. MLK, Jr. Charter School in terms of planning for events and addressing school goals for the future. The parent association is a vital link in a partnership between school, home, and community. They are dedicated to fostering a positive, nurturing environment.

The University of Colorado at Denver is excited about the new partnership with the Friends of King School. This dynamic group of business and community leaders, educators, and administrators are dedicated to improving the quality of education for students in the New Orleans area.

Like the Friends of King School, there are many people willing to build the school grounds. A new playground on-site would provide a vibrant center of outdoor activity for the children of the Dr. MLK, Jr. Charter School. The playground at the school will enable the children to thrive and grow physically and socially. The current playground offers minimal opportunities for physical education. Socialization is an important aspect of a child’s healthy development and the grounds as they exist are not conducive for this. The new playground will be a crucial part of the rebuilding of the Lower Ninth Ward. It will serve as a beacon to the community that values the need for places for children to be able to play in a safe and nurturing environment.

Prior to Hurricane Katrina only the school children and people affiliated with the school were allowed to use the exterior play areas. Concurrent with the playground planning, the University of Colorado at Denver will be working with the Dr. MLK, Jr. Charter School to develop strategies for public use.

Dr. MLK, Jr. Charter School Mission: To create and maintain an orderly trusting environment where teaching and learning are innovative and exciting; where students are taught to read, write, compute, and think critically according to their fullest potential.

Demographics

<table>
<thead>
<tr>
<th>Number of Children by Age</th>
<th>Ethnicity % (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 2</td>
<td>African American 100%</td>
</tr>
<tr>
<td>2-5</td>
<td>Hispanic %</td>
</tr>
<tr>
<td>6-12</td>
<td>Asian &amp; Pacific Islander %</td>
</tr>
<tr>
<td>13 and up</td>
<td>Caucasian %</td>
</tr>
<tr>
<td></td>
<td>Other %</td>
</tr>
</tbody>
</table>

The number of children at your site enrolled in federal free or reduced lunch programs. 440 students

(This estimation was provided by personal contact with Steve Martin in New Orleans who is actively involved in the community and the school.)
Course Approach And Community Involvement

The “Finding Common Ground: New Orleans Style” class at University of Colorado at Denver focused on using the participatory design process while working with the community of the Lower Ninth Ward to redesign the Dr. Martin Luther King, Jr. Charter School grounds. The class focused the first few weeks on the school and community background while researching different playground ideas. Students were divided into four different groups with each group focusing on an individual concept plan for the Dr. MLK, Jr. Charter School’s playground. Taking the existing conditions of the site into consideration, these concepts were primarily based on the students’ first impressions.

Next, the class split into seven different sections working on specific “area of interest” boards. These topics included:
1. K-8 science curriculum using the outdoor classroom
2. Play and physical activity standards and square footages of the site
3. Vernacular architecture and playground elements
4. Plant systems, eco-systems and addressing the issues of stress of an urban environment
5. History and culture
6. Human and behavior aspects of children
7. Leadership in Energy and Environmental Design (LEED) and sustainability

These boards included photographs of precedent studies and successful images which relate to the topic. In addition, each group included a summary of what each group desired to achieve through their research.

From March 8–13, the “Finding Common Ground” class visited New Orleans. On site, the university students participated in classroom activities of various age groups and talked with Dr. MLK, Jr. students.
about what they wanted to see in their new playground. In general the children, teachers and staff wanted many of the same elements within the playground. After compiling the results into a matrix, a few stood out such as a swimming pool, swings, shade structures, lighting, fruit and vegetable gardens, flower gardens and a basketball court. On Saturday March 10, the school held “Super Saturday” where parents could pre-register their children for the following school year. Here, the class set up the seven “area of interest” boards and the four concept plan boards. Children were asked to put either a red or green sticky dot on the boards next to the photos they liked or disliked. Later data was gathered from these boards and organized into charts. The charts were referenced by the university students to improve design decisions for the playground that reflect the ‘wants & desires’ of the Dr. MLK, Jr. students. The charts revealed several ‘wants & desires’ to be very important for the children, with the following having the most positive feedback:

- flower gardens
- learning gardens
- map of the US
- shelters or sculptures
- natural play
- role models
- a maze
- Mardi Gras colors
- Parents and students wanted to see the church on the school property relocated
- Students wanted the existing breezeway removed

they desired to see the new playground as something that could engage the families, and encourage them to interact with one another
the school is seen as a beacon for the community and therefore must be able hold spaces for community interaction
they want the playground to have gathering spaces
they desire a space to hold team activities to help students build character
teach children stewardship through the building and maintaining of the playground

As a result of the trip, the university class improved their understanding of the community’s wants and needs for the new playground—ultimately helping to design a new playground for the Dr. Martin Luther King, Jr. Charter School.

After the trip to New Orleans, the students of the “Finding Common Ground” class discussed individual observations, as well as refined the initial four concept plans into two concept plans. Additionally, from the data collected with the “areas of interest” there was a need for further refinement, where as ten different groups focused on:

1. Concept plan refinement
2. Science education and school yard elements
3. Outdoor art and culture/history elements
4. Child friendly neighborhood plan (Claiborne and Caffin Civic Plan)
5. Ecological zones (green building)
6. Architectural elements

“A heart means you love your parents and brothers and sisters”
—Pre-K student referring to a heart he drew on the butcher paper during art class

“I love performing on stage”
—Tayana Remon, age 13, in response to what she wanted on her playground

“A central gathering area is very important for the community”
—Unknown local Landscape Architect
7. Play equipment/traditional play
8. Assessing community and school desires and input
9. Cost estimating (grants and construction)
10. Grant preparation and coordination

A second group of university students visited New Orleans to collect reactions to the modified boards. Based on this trip, and as a capstone for the class, a final concept plan was created and divided into six concentration areas. Each study area includes a summary and a photo montage contained in this packet of information.

1. Central gathering place and landscaped pockets
2. Greening of the Field & the hills
3. Intermediate Play Area & Primary Play Area
4. Courtyard of Science and Nature Hall of History
5. Children’s Garden & Gateway’s
6. Main Entry Murals

Throughout the process the “Finding Common Ground” class wanted to involve the community as much as possible through the participatory design process. With the help of the community of the Lower Ninth Ward and the students, teachers and staff of the Dr. Martin Luther King, Jr. Charter School, the design process for their playground has been a success.

“I want shade on my playground”
—Eric Lewis, 3rd grader, in response to what he wanted on his playground
Research Focus

Community input from March, 2007 student and community meetings

Overview
- This board represents community input from students, parents and community members from meetings in March, 2007.

Interpretation of Stakeholders Feedback

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Comments and Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>Swimming pool and water features, swings, slides, hard surfaces for play, bull fields, basketball court, shade devices, garden, flowers, trees, snack bar/concession stand, benches to read and tables to play games.</td>
</tr>
<tr>
<td>Parents</td>
<td>Safety concerns at the school, monitoring of school grounds, community garden, swimming pool for community use, relocate the church.</td>
</tr>
<tr>
<td>Teachers</td>
<td>Bus pick-up and drop-off issues, public and private parking, contaminated water and soil, access for disabled children, rainwater collection system for watering, garden used to increase nutrition for the students.</td>
</tr>
<tr>
<td>Community members</td>
<td>Swimming pool, pecan trees, library access and parking.</td>
</tr>
</tbody>
</table>

Quotes from the Community

Students:
“I want shade on my playground” Eric Lewis Ms. Kelly’s 3rd Grade

“Fruit trees with oranges and lemons, butterflies and flowers” Kindergarten Student

“I want swings, shade and a water fountain” 6th Grade Student

“I want a garden on my playground” 2nd Grade Student

Parents:
“I would like to see the church moved off of the school grounds and relocated” Parent

“Need a place for community league games football, soccer, etc.” Nakia Davis, Parent

Images
1. Student Drawings
2. Student Drawings
3. Student Drawings
4. Student brainstorming
5. Student brainstorming
6. Student brainstorming
7. Community meeting
8. Community meeting
9. Community meeting
Site Recommendations for Dr. MLK, Jr. Charter School Playground

The class has proposed several critical recommendations necessary to implement this plan.

1. Purchase the two church properties

2. Raise or relocate the Church of God Chapel across the street to the vacant lot due west

3. Relocate the indoor swimming pool to the adjacent Sanchez property due to spatial limitations. (see adjacent drawing)

4. Remove the parking to allow for a multi-purpose play field and redesign a parking lot closer to the building.

5. Renovate Sanchez Center

Critical Civic Center Recommendations

1) Two church properties to be purchased by school
2) Indoor swimming pool - as fit within the Sanchez building - recommended
3) Parking lot removed and incorporated as a part of the playground
4) Potential community garden locations
The overall playground envisioned will have many visual appealing aspects. The landscape will offer many eye pleasing vegetation with colorful raised beds and a variety of plants offering a nature like feel. Walking paths meander through the site and lead to a sheltered focal point for performances and outdoor classes. The multi-purpose field will entertain older kids engaging in informal play, football, and soccer. A natural play area includes boulders, small hills and dips. This play area allow children to interact with the environment through different elevations, climb and play hide and seek. Hard surface play allow children to engage in basketball, tetherball, 4-square, and shuffle board. A school garden surrounded by raised beds, plants, and sculptural pieces creates an appealing atmosphere adjacent to the main courtyard. The main courtyard will be filled with colorful murals about music and the history of New Orleans. In addition, the courtyard will permit children to sit and socialize with one another. A gateway structure, located north of the playground, marks the public's entrance. The bus drop-off on the east side of the building is balanced by the vehicular drop-off on the west side of the school. The Pre-K play area has a variety of play elements to engage children such as a Butterfly Garden, a play structure, and artificial turf. Shade is a vital part of the plan, thus, the existing walkway will be relocated in fragments to create multiple shaded locations for resting.

Intermingle the various play spaces, circulation paths, and the landscape to allow for a unified school playground.
Greening of the Field and The Hills

**Greening of the Fields** — We propose to remove the existing parking lot, relocate the gateway and purchase the church property in the northeast corner inorder to provide a large multi-use grass field for turf related activities. Approximately 225 by 150 feet, the field can be used for organized play, such as baseball, football, and kick ball, or informal play that requires larger, unobstructed spaces. Although stripping is possible for specific activities, it’s anticipated that the field will remain largely un-striped allowing for a variety of configurations and parallel play. In the event the field is used for soccer, the green is large enough for U10 soccer (40 x 70 yards) and may include movable soccer goals.

Around the perimeter of the field is a crusher fine track and a backstop for baseball or kick ball. Bleechers along the north side of the field allow for seating and larger school or community events. Serving as a welcoming element to the field and the rest of the playground is the relocated covered gateway. The covered walkway will be removed and reused in smaller segments throughout the playground as shade structures. As a part of the north fence, the gateway can serve as an important access point, provide a canvas for permanent school artwork, and serve as a historical link to school.

**The Hills** — Along the eastern edge of the play field is the hills, an outdoor learning area that features native plants indegeounous of local upland forests, informal pathways meander through undulating mounds eventually leading to an outdoor classroom. Organized to incorporate the four existing Larch trees, the hills are intended to be an area of transition, partially planned and partially created by the students that will use this area for playing, exploring, and learning. Students will transplant native species in cooperation with Louisiana State University extension service and the Louisiana Forestry Department.

Other components found in The Hills may include; signage for plant or science interpretation, a variety of natural seating elements (particularly in the classroom space), permanent ground elements (ex. wildlife footprints), and loose play material.

“Need a place for community league games, football, soccer, etc.”
—Nakia Davis, Parent
Central Gathering Place — Designed to foster a sense of community among the students, faculty, and residents of the Lower Ninth Ward. This central gathering place is the datum of the playground. This space can function in a variety of ways including formal and informal gathering, performance space for the band and dance troop, as an outdoor classroom, a place to play games, and a display area for student art work. With the re-appropriation of lighting from other areas of the site, this space could be used for evening activities by the surrounding community.

Architecturally, a light weight, extremely durable shade structure made with steel and heavy fabric will provide relief from the warm New Orleans climate and help guide people through the site. A place for gathering and performance was a request made by several community members during the initial design reviews with the residents. A goal for the Learning Landscape Initiative is to encourage social interaction among the students beyond the various types of traditional play equipment.

Landscape Process— Placed throughout the playground, landscape pockets act as a way of bringing the surrounding natural environment into a play setting. The intention is to use naturalized species of plants that have been used historically in the New Orleans region. The flowering plants provide a fragrant aroma while attracting birds and insects that can be incorporated into the science curriculum. These spaces can function on an educational level through activities such as plant identification, learning about animal habitats, and journaling about the changing of the seasons. These areas will provide the students with a critical understanding of their surrounding environment. There was great interest and excitement by the community members to make plants and gardens a part of this vibrant space. The integration of the natural environment with the traditional play environment is a very important aspect of a built learning landscape project.

Create spaces that are functional, welcoming, and aesthetically pleasing as well as a source of school and community pride.

A new shade structure will craft a school and community assembly space for entertainment and play while enhancing the campus with a visual, architectural element.
Provide activities and spaces that promote different types of play, entice participation, and promote physical development.

Primary/Pre-K Play Area and Intermediate Play Area

Primary and Pre-K Play Area—The Primary and Pre-Kindergarten Play Areas will include vibrant play structures that offer many opportunities for different types of play such as climbing, stepping, balancing, and sliding. The play equipment will promote exciting and healthy exercise that highlights gross motor skills and body movement crucial for Primary and Pre-Kindergarten aged children. There will also be hard surface play elements such as hop-scotch, tetherball, triple hoop shoots, and four-square. A set of swings will provide additional entertaining activity. This area will capture the child’s imagination while promoting diverse kinds of motion and interaction between children of all abilities.

Intermediate Play Area—The Intermediate Play Area will likewise serve as a dynamic activity center that will engage and challenge children physically while having fun. This play structure will have emphasis on climbing and movement appropriate for the older children and their need for upper body development. The platform areas of the Intermediate Play Area will contain a space for social interaction. Also, these platforms fluctuate in elevation to enhance the site views. The experience will offer opportunities for exploration that promote healthy growth and development that is crucial for the older children. A global map that shows climate zones will be included in the Intermediate play area. Deconstructed pieces of the existing shaded breezeway as well as a variety of trees will be included in the play areas to help accommodate for shade.
Courtyard of Science & Nature and the Hall of History

Courtyard of Science and Nature—The courtyard of science and nature at the Dr. Martin Luther King, Jr. Charter school will be a colorful outdoor space providing students with opportunities for learning while promoting culture and creativity. In the courtyard children will be enclosed in an enriching environment featuring elements such as flowers, trees, fountains and murals forming an oasis for education. The courtyard will be a private space for the school to conduct educational activities in an active outdoor learning environment.

In the “Science Central” area of the courtyard students will be active collecting samples from ecosystem gardens for science experiments or sitting down to a game of chess to develop logical thinking skills while surrounded by colorful and unique plants and paintings. An ecosystem garden will demonstrate various aspects of natural science and help students to strengthen relationships with the environment. A weather station will sit on top of the courtyard gathering data on local weather conditions. A mural of weather patterns and various cloud formations painted on the ceiling of the courtyard will connect the students to the weather station as they learn and play outside. The students will access the weather data through computers in their classrooms and use the information to learn about weather systems.

Hall of History—The walls of the courtyard form the “Hall of History” featuring murals depicting a variety of themes such as music, history, and the culture of New Orleans. The floor of the courtyard will feature an array of maps, mazes, and spaces to roll out large pieces of drawing paper. Students will contribute to the beautification of the courtyard by participating in creative activities led by various artists in residence. The cultivated courtyard will help foster school spirit and community pride as students at the Dr. MLK, Jr. Charter School feel proud of their unique school environment.
Children’s Garden and Gateways

Children’s Garden—A cultivated school garden is located adjacent to the cafeteria. Children will grow fruits and vegetables with the concept of ‘seed to table’ focus. The garden will have raised beds, plants, and sculptural pieces to create an appealing atmosphere adjacent to the main courtyard. The garden will be nearby one of the two new main gateways to the school yard.

Gateway—The gateway will be immediately adjacent to the new parking lot that can accommodate up to 50 cars. On street parking for the additional 10 cars requested by the school will be on caffin street. The public entrance will incorporate portions of the present walkway structure. Colored plexi-glass panels will be used to create an inviting entry while permitting an all weather walkway. The bus drop-off on the east will incorporate identical design principles of the gateway.

"Fruit trees with oranges and lemons, butterflies and flowers"

—Kindergarten Student in response to what she wanted on her playground
APPENDIX

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BEGINNINGS
WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES
Project Vision
The Martin Luther King Jr. Elementary Charter School for Science and Technology Campus will be a
multi-generation activity hub which will act as a catalyst to revitalize the lower 9th ward community and reflect
the New Orleans way of life.
Project Goals
1) Provide a variety of activities for people of all ages, genders, and special needs.
2) Create spaces that are aesthetically pleasing and are a source of school and community pride.
3) Create outdoor opportunities that promote informal interaction with nature, allow for children’s
social skills to be fully realized, and allow for uses that support the educational curriculum.
4) Provide for the welfare of the lower 9th ward community through healthy outdoor environments.
5) Create easy access play areas that stimulate different types of play.
6) Actively involve children and young people in the planning, building, and maintenance of their own
space.
7) Create an outdoor play area that is easily maintainable.

Site Opportunities

To Remain

Table of Site Opportunities

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<tr>
<th>Stakeholders</th>
<th>Potential Issues</th>
<th>Solutions</th>
</tr>
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<tbody>
<tr>
<td>Students, teachers, parents, staff</td>
<td>Safe access for playground (safety, play)</td>
<td>Safe access for playground (safety, play)</td>
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<td>Students, teachers, staff, community</td>
<td>Maintenance of playground</td>
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<td>Students, parents, staff, community</td>
<td>Safe access for playground</td>
<td>Safe access for playground</td>
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<tr>
<td>Students, teachers, parents, staff</td>
<td>Safe access for playground</td>
<td>Safe access for playground</td>
</tr>
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</table>

Spatial Diagram

Ideas
1) Multi-use Play Field: soccer, football, kickball
2) Backyard Games: four square, basketball, hopscotch, tetherball
3) Interpretive Play: age-specific traditional play equipment and elements that support creative
play
4) Interpretive Children’s Garden: based in the local ecologies
5) Park/Play Area: age-specific play equipment, self-play
surfaces
6) Community Garden: vegetable garden for school and community to participate in
7) Picnic Area: shade structure, picnic tables, trash barrels
8) Landscape Buffer: appropriate landscape to buffer church from school and outdoor classroom
9) Outdoor Classroom: landscaping, benches, tables
10) Courtyard Areas: improve courtyards with landscaping, benches, murals
11) School Recycling Area
12) Improvements to Library
13) Entrance
14) Interpretive Path
15) Entryways: improve entries with formal gates, landscaping, and lights
16) Parking Areas
17) Existing Bus Drop Off: make larger
18) Shade structures
19) Primary Play: age-specific traditional play equipment and elements that support creative
play
20) Prospect Mount/Outdoor Theater

Site Potential
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES

Project Vision
A welcoming and sustainable place for school children and community residents that is safe and stimulates play, and celebrates the cultural and historical richness of the Lower 9th Ward.

Project Goals
1) Design welcoming elements that can serve both the school and the community throughout the year.
2) Revisit the design of the school yard and its walks and paths as a journey throughout the site.
3) Provide a variety of age-appropriate play areas to engage multi-generational use.

4) Ground Martin Luther King, Jr. Elementary School into its place, time, and community in the Lower Ninth Ward and New Orleans, Louisiana.
5) Ensure the long-term success of the Learning Landscape through sustainable design and community involvement.

Site Opportunities

Site Potential

Proposed

Church is improved, Purchased by the school

Martin Luther King, Jr., Elementary School Learning Landscape
Concept Plan Two
Jen Kost
Kat Pecoraro
Zoe Seizer

Spatial Diagram

Ideas
1) Pocket Parks
2) Forest Play Area
3) Pocket Greens
4) Ground Play Area
5) Greenhouse
6) Outdoor Classroom
7) Outdoor Learning
8) Play Area
9) Greenhouse
10) Pocket Park
11) Pocket Garden
12) Pocket Green
13) Outdoor Classroom
14) Outdoor Learning
15) Play Area
16) Greenhouse
17) Pocket Park
18) Pocket Garden
19) Pocket Green
20) Outdoor Classroom
21) Outdoor Learning
22) Play Area
23) Greenhouse
24) Pocket Park
25) Pocket Garden
26) Pocket Green
27) Outdoor Classroom
28) Outdoor Learning
29) Play Area
30) Greenhouse

Spring 2007
Dr. Martin Luther King, Jr. Charter School for Science and Technology
©2007 University of Colorado at Denver and Health Sciences Center
BEGINNINGS

WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES

Vision: The Martin Luther King Jr. Elementary Charter School for Science and Technology Campus will be a holistic learning environment for the school and community.

Project Goals:
1. Safety - Provide a clean, safe and welcoming place for children to play.
2. Civic Engagement - Respect school/community engagement during the planning, design, construction and maintenance and monitoring of the school yard.
3. Outdoor Learning Environment - Provide an outdoor learning environment through hands-on experience, for science and technology, supporting the school’s vision.
5. Holistic Approach - Provide an outdoor setting promoting physical/academic education and socialization.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Considerations</th>
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<tbody>
<tr>
<td>Students, teachers, staff</td>
<td>Reduce bullying and other discipline issues</td>
</tr>
<tr>
<td>Students</td>
<td>Reduce possible self-esteem issues</td>
</tr>
<tr>
<td>Students</td>
<td>Reduce safety problems based on current physical site layout</td>
</tr>
<tr>
<td>Students</td>
<td>Access to appropriate amount of play equipment</td>
</tr>
<tr>
<td>Students, teachers, staff, community</td>
<td>Access to outdoor educational resources</td>
</tr>
<tr>
<td>Students, teachers, staff, community</td>
<td>Access to vegetation on school grounds</td>
</tr>
<tr>
<td>Students, teachers, staff, community</td>
<td>Access to soft surface areas preventing user injuries</td>
</tr>
<tr>
<td>Students, teachers, staff, community, service personnel</td>
<td>Access to vehicular/bus drop-off that is safe and practical</td>
</tr>
<tr>
<td>Students,</td>
<td>Great potential for community use and social</td>
</tr>
</tbody>
</table>

Ideas
1. Ball field
   - Soccer
   - Marching band
   - Football
2. Natural Play Area
   - Bird Feeders
   - Urban Forest
   - Natural Habitats
   - Wild Grass and Flowers
3. Outdoor room
   - Outdoor Classroom
   - Shade/Rain/Bug Shelter
   - Sneaker Space
   - Picnic space
4. Community Garden
   - Vegetable
   - Herb
   - Flower
   - Butterfly
5. Primary Play Area
   - Swings
   - Slides
6. Sand Play Area
   - Archaeology Site
7. Pre-Kindergarten Play Area
8. Semi-Outdoor Learning
   - Wetland Habitat
   - Fish Hatchery
   - Art Space
   - Reading Room
   - Vegetation Planters
   - Weather Station
9. Central Gathering Area
   - Elevated Performance Stage
   - Public Art Sculpture
10. Intermediate Play Area
    - Jump Ropes
11. Rock Formation Play Area
12. Music Garden
    - Sound Sculptures
    - Musical Water Features
13. Hardscape Play Area
    - Basketball
    - Four Square
14. Parking
15. Trash Enclosure and Storage
16. Main Entrance and Gateway
17. Entrance Walkway
    - Family Name Pavers
    - Murals
    - Student Art
    - Banners
18. Bus Drop-Off
19. Mural
20. Street Scapes Enhancement

Site Potential
Surface Materials

Dr. Martin Luther King, Jr. Charter School for Science and Technology • Spring 2007
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES

Vision
To create a safe, welcoming, revitalized and accessible play park that embraces the Lower 9th Ward’s cultural history, richness and diversity, offering places and activities that promote education, physical development and gathering.

Goals
1. Provide spaces and activities that educate children through academic discovery.
2. Provide spaces and activities that entice participation and promote physical development.
3. Provide spaces that contain living playgrounds of natural vegetation, natural grasses, and local habitat that spark curiosity.
4. Provide spaces that will welcome the neighborhood and encourage sharing music, art, and cultural history.
5. Provide spaces that allow solitude and reflection.
6. Provide easily accessible community spaces while encouraging play spaces for each age group.

Suggestions

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>What to Address?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students, Teachers, and Community</td>
<td>Variety of play surfaces</td>
</tr>
<tr>
<td>Community</td>
<td>Provide gateway that announces entrance to public</td>
</tr>
<tr>
<td>Students, Teachers, Parents</td>
<td>Bus drop off reconnect to main entrance</td>
</tr>
<tr>
<td>Students, Teachers, and Community</td>
<td>Feature a Central Gathering Space</td>
</tr>
<tr>
<td>Students, Teachers, and Community</td>
<td>Join community school and church in overall design of school grounds</td>
</tr>
</tbody>
</table>

Spatial Diagram

Potential Enhancements
1. Multi Purpose Field
   - older children: Football, Soccer
   - younger children: Tag, kick ball
2. Ecological Zone
   - Upland Forest
3. Soft Play Surface
   - With Boulders
4. Hard Play Surface Older
   - Children: Four Square, Tether Ball, Shuffle Board
5. Hard Play Surface Younger
   - Children: Tunnel Ball, Hopscoot, Four Square
6. Climbing Wall: 6-10 foot safety zone
7. Butterfly Garden: native plants
8. Play Equipment: Younger
   - Children: Swings, slides, monkey bars
9. Pre Kindergarten Natural Zone:
   - sand box, Pecan Grove
10. Outdoor Class Room Gathering Place: sleeping grass
11. Outdoor Reading Area: Community Use and School Use
12. Outdoor Library Reading Area: Community and School use: Benches, grass, shade
13. Outdoor Cafeteria: Picnic Tables, Shade
14. Performance Area: band, science experiments
15. Art Area: Music and Historical murals
16. Cultural History Area: murals and Maps
17. Focal Point Plaza: Shade Structure, water feature/art sculpture
18. Service Entrance
19. Community Building: convened and meetings
20. Community Parking
21. Bus Drop-Off and Turnaround

Team 4
Raymond Winn
Gary Taiapolu
Joe Kuk

Martin Luther King, Jr
Elementary School Learning Landscape

Spring 2007 • Dr. Martin Luther King, Jr. Charter School for Science and Technology
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT THE HISTORY AND CULTURE OF THE LOWER NANTWARD...
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT GREEN BUILDING & RENEWABLE ENERGY

Opportunities

Green Building and Renewable Energy
Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs. ~ 1987 UN World Commission on Environment and Development, the Brundtland Commission

A sustainable society is one that can persist over generations, one that is far-sighted, flexible enough, and wise enough not to undermine either its physical or its social systems of support. ~ Donella H. Meadows, Beyond the Limits

Renewable Energy Options
Domestic Solar Hot Water
Methane
Solar Panels

Sustainable Materials: Rubber
Rubber Flooring made of Recycled Tires
Utilized Around Play Equipment
Rubber “Bark” Chips
Utilized Around Play Equipment

Sustainable Materials: Glass
Glass “Mulch”
Utilized in Gardens and Landscaping
Recycled Glass Aggregate Flooring
Pathways, Sculptural Elements
Sustainable Materials: Plastic
Recycled Plastic Benches
Variety of seating around grounds
Prefabricated and low maintenance

Sustainable Materials: Plastic
Recycled Plastic Benches
Variety of seating around grounds
Prefabricated and low maintenance

Research Imagery
1) Solar Hot Water - Thermosyphon
2) Solar Hot Water - Concentrating
3) Neighborhood Methane Project
4) Methane Storage
5) Solar Electric
6) Solar Electric science project
7) Recycled Rubber matting
8) Recycled Rubber “bark” chips
9) Solar Electric school project
10) Renewable Energy project
11) Recycled Glass pathways
12) Recycled Glass aggregate flooring
13) Solar Collector awning
14) Solar Science project
15) Recycled Plastic bench
16) Recycled Plastic bench
17) Recycled Plastic bench
18) Wind Energy system
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT ARCHITECTURAL OPPORTUNITIES

Architectural Elements

New Orleans's Architectural Design Goals
- Provide shelter against intense sun and rain
- Capture natural breezes

New Orleans's Distinguishing Architectural Elements
- Raised ground floors for flood protection
- Deep porches to protect from the sun's heat
- Tall ceilings which allow the heat to rise
- French doors, full height windows, jalousie windows, shutters, and porch fans allow for maximum air circulation
- Ornamental iron fences
- Garden walls
- Courtyards

New Orleans's Architectural Influences
- Creole
- Acadian

New Orleans's Architectural Typologies
- Victorian
  - Simple form
  - Porch ornamentation
  - Railings details
  - Decorative cornice millwork
- Classical
  - Simplified version of the Victorian style
  - Main symmetrical body with added sided wings
  - Front porch with t one or Corinthian columns
- Arts & Crafts
  - Deep overhangs with exposed roof rafters
  - Use an array of local materials unique to New Orleans
  - Asymmetrical plans
  - Rich colors used on contrasting trim
- Modern Architecture
  - Simple form
  - Lacks ornamental detail
  - Generous use of glass
  - Open interior/exterior spaces

Architectural opportunities for Martin Luther King Jr. Charter School
- School gateways
- Shade structures
- Murals
- Flags
- Planters
- Sculptures
- Water features
- Breezeways

Research Imagery
1) Victorian Architecture Example
2) Classical Architecture Example
3) Arts & Crafts Architecture Example
4) Modern Architecture Example
5) Fence & Wall Examples
6) Architectural Detailing Examples
7) Adjacent Architecture
8) Adjacent Architecture
9) DPS Gateway
10) DPS Shelter
11) DPS Wall Mural
12) Idea Generating
13) Idea Generating
14) Idea Generating
15) Idea Generating
16) Idea Generating
17) Idea Generating
18) Idea Generating

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BEGINNINGS

We are asking for your input on Childhood Development During Play

Opportunities
- This board explains the behavior and development of children in relation to the MLK School. Developmental issues related to play include cognitive, emotional, social, and cultural developments.
- Through play children form friendships.
- Play also develops mental skills like problem-solving and vocabulary.

Child Development and Behavior

Safety:
- Safety is the top priority which affects playground use, where playgrounds should be supervised before, during, and after school.

Social and Psychological Factors:
- Interaction with older children and caring adults outside of the home provide guidance as well as mentoring.

Natural Play:
- Access to nature with a range of vegetation provides children with the best opportunity for free and creative play.

Leisurely Play:
- Provide alternative play like board tables, puzzles, semi-private places like boulders, tall grasses, and elevation changes.
- Provide physical access to play opportunities for children with disabilities.

Development:
- Children like spaces which they can manipulate.
- Pre-school to age 7 start to use exploratory play for creative expression and start problem-solving.
- 7-9 year-olds slowly start understanding more rules and play interests develop.
- 10-12 year-olds like to invent new rules in games and are start becoming interested in membership and belonging. Ethical and moral behavior becomes a focus.

Types of Play

Solitary Play:
- Children play away from one another with a great distance between each other and most of the time have their backs turned from the other kids.
- They are engaged in a different activity and do not pay attention to the other children’s behavior.

Parallel Play:
- Children play independently from one another, however they are in close proximity to one another.
- They tend to play alongside each other, but do not play together.

Associated Play:
- Children are playing with others and are participating in a similar activity.
- Communication and materials are exchanged, but there is no overall goal.

Cooperative Play:
- Children organize themselves into groups with common goals for the activity.
- The activity is group-centered.

Competitive Play:
- Similar to cooperative play, however the activity has now become a competitive game.
- Often these can take the shape of team sport activities.

Research Imagery
2. Parallel play 12. Cooperative play- working on a mural
3. Associated play 13. Associated play- children dancing
4. Parallel play 14. Cooperative play- students spreading mulch
5. Competitive play 15. Solitary play
7. Playing chess 17. Natural play
8. Cooperative play 18. Natural play- Children planting a tree
9. Natural and cooperative play
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT Outdoor Learning

Opportunities

Louisiana Curriculum Standards and ways to incorporate learning experiences in an outdoor setting.

Science

- **Life Science:** The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.
- **Earth and Space Science:** The students will develop an understanding of the properties of earth materials, the structure of the Earth system, the Earth's history, and the Earth's place in the Universe.
- **Physical Science:** Students will develop an understanding of the characteristics and interrelationships of matter and energy in the physical world.

Visual Art, Music, Dance

- **Creative Expression:** The ability to imagine, organize, and interpret ideas for expression in the process of creating and producing art forms which involve inspiration, analysis, and problem solving.
- **Aesthetic Perception:** The ability to perceive the unique characteristics of natural environments and human creations, to respond to aesthetic ideas and experiences, and to develop awareness of beauty and meaning in the arts.
- **Historical and Cultural Perspective:** The ability to recognize the arts as a reflection of individual and cultural expression and to appreciate the aspects of history and human experience.

Social Studies

- **Geography:** Students develop a spatial understanding of Earth's surface and the processes that shape it, the connections between people and places, and the relationship between man and his environment.
- **History:** Students develop a sense of historical time and historical perspective as they study the history of their community, state, nation, and world.

Math

- **Geometry:** In problem-solving investigations, students demonstrate an understanding of geometric concepts and applications involving one-, two-, and three-dimensional geometry, and justify their findings.
- **Patterns, Relations, and Functions:** In problem-solving investigations, students demonstrate an understanding of patterns, relations, and functions that represent and explain real-world situations.

Research Imagery

1) Seedling Garden
2) Planting Garden
3) Vegetable Garden
4) Edible Garden
5) Kenetic Sculpture
6) Climbing Rocks
7) Water Cycle Mural
8) Natural Area
9) Playground Map
10) Solar System Panel
11) Logical Thinking Games
12) Weather Forcasting Panel
13) Maze
14) ABC 123 Panel
15) Play Web
16) Drum Panel
17) Wisper Chamber
18) Outdoor Art Space
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT PLAY AND PHYSICAL ACTIVITIES

Opportunities
Play equipment should provide opportunities for both mental and physical development. Guided and free play on outdoor equipment helps children of all ages develop their muscles, define their sense of space, develop eye-hand coordination, increase body awareness, increase physical fitness skills, develop strength and endurance, and provide opportunities for social play (Moore, Goitman and Iacolino 1997).

Information of Type and Size

<table>
<thead>
<tr>
<th>Play and Physical Activity</th>
<th>Categories of Play</th>
<th># of “kids”</th>
<th>Dimensions</th>
<th>Safety Zone</th>
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<tbody>
<tr>
<td></td>
<td>1. Solitary Play</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>2. Parallel Play</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Associated Play</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Cooperative Play</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Competitive Play</td>
<td></td>
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<table>
<thead>
<tr>
<th>Type of Equipment or Activity</th>
<th>Categories of Play</th>
<th># of “kids”</th>
<th>Dimensions</th>
<th>Safety Zone</th>
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</thead>
<tbody>
<tr>
<td>1. Basketball</td>
<td>1.2.4.5</td>
<td>up to 15 each</td>
<td>35’x70’ vs. Full court</td>
<td>5</td>
</tr>
<tr>
<td>2. Soccer</td>
<td>1.2.4.5</td>
<td>up to 20</td>
<td>120’x60’</td>
<td>5</td>
</tr>
<tr>
<td>3. Four Square</td>
<td>4.5</td>
<td>4 each</td>
<td>16’x16’ (total court)</td>
<td>—</td>
</tr>
<tr>
<td>4. Frisbee</td>
<td>4.5</td>
<td>2 each</td>
<td>18’ dia</td>
<td>—</td>
</tr>
<tr>
<td>5. Hop Scotch</td>
<td>1.2.4.5</td>
<td>2-4</td>
<td>17’x6’x3’</td>
<td>—</td>
</tr>
<tr>
<td>6. Hop Scotch (Pre-K)</td>
<td>1.2.4</td>
<td>1-2</td>
<td>7x2</td>
<td>—</td>
</tr>
<tr>
<td>7. Swing</td>
<td>1.2</td>
<td>2+</td>
<td>&gt;375 SF per each pair</td>
<td>included</td>
</tr>
<tr>
<td>8. Sand Box</td>
<td>1.2.3</td>
<td>1+</td>
<td>100+ SF</td>
<td>—</td>
</tr>
<tr>
<td>9. Pre-K Play Set</td>
<td>1.2</td>
<td>up to 30</td>
<td>30’x60’ (±/±)</td>
<td>included</td>
</tr>
<tr>
<td>10. Intermediate Play Set</td>
<td>1.2</td>
<td>up to 25</td>
<td>30’x60’ (±/±)</td>
<td>included</td>
</tr>
<tr>
<td>11. Primary Play Set</td>
<td>1.2</td>
<td>up to 30</td>
<td>60’x60’ (±/±)</td>
<td>included</td>
</tr>
<tr>
<td>12. Batting Trench</td>
<td>1.2.3.4</td>
<td>1+</td>
<td>Each varies</td>
<td>6’-10’ infield</td>
</tr>
<tr>
<td>13. Hills and mounds</td>
<td>1.2.3.4</td>
<td>1+</td>
<td>20+ SF</td>
<td>5’</td>
</tr>
<tr>
<td>14. Climbing wall</td>
<td>1.2-5</td>
<td>3.6’ (+1)</td>
<td>15x15’ (±/±)</td>
<td>6’-10’</td>
</tr>
<tr>
<td>15. Outdoor Classroom</td>
<td>4</td>
<td>15-20</td>
<td>25’x25’</td>
<td>—</td>
</tr>
<tr>
<td>16. United States Map (50 states)</td>
<td>1.2.4</td>
<td>1+</td>
<td>1200 SF (state x 100 m)</td>
<td>—</td>
</tr>
<tr>
<td>17. World Map</td>
<td>1.2.4</td>
<td>1+</td>
<td>up to 3600 SF (States NA)</td>
<td>—</td>
</tr>
<tr>
<td>18. Balance Beams</td>
<td>1.2.3</td>
<td>1+</td>
<td>10+ LF</td>
<td>6’-10’</td>
</tr>
<tr>
<td>19. Shade Elements</td>
<td>1.2.3.4</td>
<td>1+</td>
<td>20+ SF</td>
<td>—</td>
</tr>
</tbody>
</table>
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ON ECOLOGY

Ecology
The focus of the ecological research is to establish opportunities for the environment of greater New Orleans to be integrated into the design of the Martin Luther King Jr. Elementary school playground re-design.

Climate:
*Hot, humid summers with afternoon thunderstorms.
*Average precipitation of 64 inches per year.
*Mild winters with brief periods of cold weather that are rarely severe.

Ecologies:
*Brackish marsh system which is an area that lies between salt marsh and intermediate marsh that is characterized by salt tolerant tall grasses.
*Intermediate marsh system which is characterized by both fresh water and salt water plant species.
*Wetland forest which has standing water and woody vegetation consisting mainly of cypress and tupelo gum trees.
*Upland forest which is usually a dry area consisting of a variety of hardwoods including hackberry, elm, maple, ash, honey locust, and elderberry.

Specific Features:
*Vegetable gardens both for the school and the community.
*Formal flower gardens.
*Ecological learning gardens.
*Butterfly gardens.
*Water features.
*Fruit bearing trees.

Research Imagery
1) Informal Seating
2) Brackish Marsh
3) Intermediate Marsh
4) Swamp/Wetland Forest
5) Upland Forest
6) Wall Garden / Water Feature
7) Childrens Vegetable Garden
8) Learning Garden
9) Ornamental Grasses
10) Flowering Vines
11) Community Vegetable Garden
12) Flowering Trees
13) Live Oak
14) Nature Trail
15) Palm Garden
16) Flower Garden
17) Formal Sitting Area
18) Butterfly Garden
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES

Project Vision
A welcoming and sustainable place for school children and community residents that promotes education, physical development and celebrates the cultural and historical richness of the Lower 9th Ward.

Project Goals
1. Design welcoming elements that can serve both the school and the community throughout the year.
2. Provide a variety of age-appropriate play areas to engage multi-generational use.
3. Ground Dr. Martin Luther King, Jr. Elementary School into its place, time, and community in the Lower Ninth Ward and New Orleans, Louisiana.
4. Ensure the long-term success of the Learning Landscape through sustainable design and community involvement.
5. Provide spaces and activities that educate children through academic discovery.
6. Provide spaces and activities that foster participation and promote physical development.
7. Provide spaces that contain living playgrounds of natural vegetation, natural processes, and local habitat that spur curiosity.
8. Provide spaces that allow solitude and reflection.

Site Opportunities
- Church as a Community Building
- Passive Art/Artwork in Courtyard
- Site Feet for Multi-Purpose Play

Proposed

Site Potential

Spatial Diagram

Ideas
1) Multi-Purpose Field - Older Children
2) Multi-Purpose Field - Younger Children
3) Outdoor Classroom/Reading Space
4) Seating/Mentor Focus Point
5) Learning Play Area
6) Bridges
7) Skin-In and Skin-Out
8) Interim Play Structures
9) Primary Playgrounds
10) Hard Surface Play - Primary
11) Courtyard Focus Point (Stroller)
12) Outdoor Classroom/Reading Space
13) Pre-K Play Area
14) Playgarden Gateway/Entrance
15) Community Garden
16) Passive Art/Outdoor Area
17) Community Greenhouse/Elements
18) Ground Level
19) Educational Focus Point
20) Community Meeting Space
21) Ground Level
22) Outdoor Learning Area
23) Vegetable Gardens
24) Primary School Entrance
25) Art/Outdoor Area
26) Mechanical Enclosure
27) Site Foundation Plantings
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT TO BETTER UNDERSTAND THE SITE OPPORTUNITIES

Project Vision
The Dr. Martin Luther King, Jr. Elementary Charter School for Science and Technology Campus will be a multi-generation activity hub which will act as a catalyst to revitalize the lower 9th ward community and reflect the New Orleans way of life.

Project Goals
1) Provide a variety of activities for people of all ages, genders, and special needs.
2) Create spaces that are aesthetically pleasing and are a source of school and community pride.
3) Create outdoor opportunities that promote informal interaction with nature, allow for children’s social skills to be fully realized, and allow for uses that support the educational curriculum.
4) Provide for the welfare of the lower 9th ward community through healthy outdoor environments.
5) Create easy access play areas that stimulate different types of play.
6) Actively involve children and young people in the planning, building, and maintenance of their own space.
7) Create an outdoor play area that is easily maintainable.

Ideas
1. Multi-use Play Field
2. Hard Courts - Basketball and Tennis
3. Natural walking pathway
4. Learning garden for children
5. Pre-K play area
6. Community Gardens and natural area
7. Community Picnic areas
8. School gardens
9. Natural area with school garden
10. Outdoor Classroom
11. Courtyards - murals and elevated vegetation
12. Murals along side of school
13. Library and front entrance improvement
14. Access points and entry-ways
15. Parking and bus access
16. Bus Drop-off
17. Shade structures
Research Focus
Community input from March, 2007 student and community meetings

Overview
This board represents community input from students, parents and community members from meetings in March, 2007.

Interpretation of Stakeholders Feedback

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Comments and Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>Swimming pool and water features, swings, slides, hard surfaces for play, ball fields, basketball court, shade devices, garden, flowers, trees, snack bar / concession stand, benches to read and tables to play games.</td>
</tr>
<tr>
<td>Parents</td>
<td>Safety concerns at the school, monitoring of school grounds, community garden, swimming pool for community use, relocate the church.</td>
</tr>
<tr>
<td>Teachers</td>
<td>Bus pick-up and drop-off issues, public and private parking, contaminated water and soil, access for disabled children, rainwater collection system for watering, garden used to increase nutrition for the students.</td>
</tr>
<tr>
<td>Community members</td>
<td>Swimming pool, pecan trees, library access and parking.</td>
</tr>
</tbody>
</table>

Quotes from the Community
Students:
“I want shade on my playground” Eric Lewis Ms. Kelly’s 3rd Grade
“Fruit trees with oranges and lemons, butterflies and flowers” Kindergarten Student
“I want swings, shade and a water fountain” 6th Grade Student
“I want a garden on my playground” 2nd Grade Student

Parents:
“I would like to see the church moved off of the school grounds and relocated” Parent

“Need a place for community league games football, soccer, etc.” Nakia Davis, Parent

Images
1. Student Drawings
2. Student Drawings
3. Student Drawings
4. Student brainstorming
5. Student brainstorming
6. Student brainstorming
7. Community meeting
8. Community meeting
9. Community meeting
IMPORTANT COMMUNITY SPACES
WE ARE ASKING FOR YOUR INPUT ON COMMUNITY SPACES AND SAFE PEDESTRIAN ROUTES AROUND THE NEIGHBORHOOD

COMMUNITY SPACES & CIRCULATION

Pictures
1-5) Community center playground
6-9) Community playground near Jackson Barracks
10-12) Hardin Elementary School
13) Community basketball courts
14) Open space near Lawless High School
15) Open space on corner of Andy & Derbigney
16) Open space across the street from Lawless High School
17) Fields at Holy Cross High School
18) Levee off of Florida Ave. looking towards Bayou Bienvenue
BEGINNINGS
WE ARE ASKING FOR YOUR INPUT ABOUT HISTORY & CULTURE, OUTDOOR ART, & ARCHITECTURAL ELEMENTS....

History & Culture
New Orleans Rich History
- Founded in 1692
- Birthplace of Jazz
- Birth of Civil Rights Movements

Outdoor Art
Artists from New Orleans
- Rachel Ford
During her graduate work at Syracuse University, Ford attended workshops with David McDonald and explored installations as an extension of her graphic design work as a form of decoration. She began to create sculptures of trees and shrubs, with serious as a metaphor for function. These installations are about the cyclical life, inclusion of birth, death and rebirth, and organization with ancestral memory were also developed in Chris Crandall (2004), an outdoor installation within the natural landscape of Stone Quarry Arch in Covington.

- Amelia Placido (Small Acts Urban Gardens)
Placido is the founder of Small Acts Urban Gardens. Placido School to help students understand their inner strength to express themselves through dances, rhythms, and other forms of expression.

Architectural Elements
New Orleans Architectural Design Goals
- Provide shade and shelter for interiors sun and rain
- Capture natural breezes

New Orleans Distinguishing Architectural Elements
- Raised ground floors for flood protection
- Deep porches to protect from the sun’s heat
- Tall ceilings which allow the heat to rise
- French doors, full height windows, jalousie windows, shutters, and porch fans allow for maximum air circulation
- Ornamental iron fences
- Garden walls
- Courtyards

New Orleans Architectural Influences
- Creole
- Acadian

Architectural opportunities for Martin Luther King Jr. Charter School
- School gateways
- Shade structures
- Murals
- Flags
- Planters
- Sculptures
- Water features
- Boulevards

Research Imagery
1) Cooperative Play- Working on a Mural
2) United States Map- Geographic mural
3) First Marshs in Louisiana- Venetian Masks shown
4) Art Installation- Grandmothers Letters
5) Denver Public School Shelter
6) Denver Public School Wall Mural
7-12) Ideas for Outdoor Art
8-11) Ideas for Outdoor Art
12) Ideas for Outdoor Art

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Spring 2007 • Dr. Martin Luther King, Jr. Charter School for Science and Technology
BEGINNINGS

WE ARE ASKING FOR YOUR INPUT ABOUT

Green Building and Renewable Energy,
Ecology, Outdoor Learning, and Childhood Development During Play

Opportunities

The following information is based on visual preferences from students, teachers and parents at the Dr. Martin Luther King Jr. Elementary School.

Sustainable Elements

One of the most innovative ways schools can actively promote green building and renewable energy is by incorporating sustainable materials into their playground.


Sustainable Materials: Rubber flooring used in various ways can be used to enhance a school environment with vibrant colors. Glass “mulch” adds colorful latter to school grounds for murals and artwork. The use of recycled plastic benches offer a variety of seating requiring low maintenance.

Ecological Elements

The focus of the ecological research is to establish opportunities for the environment of greater New Orleans to be integrated into the design of the Dr. Martin Luther King Jr. Elementary school playground re-design.

Climate: The hot and humid summers, afternoon thunderstorms and average precipitation of 64 inches per year, along with mild winters support the natural environment unique to the New Orleans area.

Ecologies: To increased knowledge of the brackish and intermediate marsh systems along with the wetland and upland forests, choosing vegetation for planting will reinforce the strong ties with the local ecosystems.

Outdoor Learning

Incorporating the Louisiana Curriculum Standards along with hands on learning experiences in an outdoor setting, will provide students with an educationally advantageous learning environment.

There are many opportunities to include science, visual art, music, drama, social studies and math into an outdoor learning environment.

Human & Behavioral Aspects

of Children at Play

The many positive environments an educational learning environment can provide a child, promoting a holistic and healthy self image through play, can make a life long impact on their role in society.

Child Development and Behavior:

Safety, social and psychological factors, natural play, leisurely play and development are key elements that are of great priority to ensure a child’s developmental needs are met.

Types of Play

The 5 main types of play, solitary play, parallel play, associated play, cooperative play and competitive play are developmental stages a child progresses through as they grow. All of these are incorporated into the playground design.

Research Imagery

1) Formal Sitting Area
2) Maze
3) Edible Garden
4) Flower Garden
5) Wall Garden / Water Feature
6) Flowering Vines
7) Vegetable Garden
8) Climbing Rocks
9) Drumming Panel
10) Wisper Chamber
11) Palm Garden
12) Learning Garden
13) Solar Science Project
14) Wind Energy System
15) Methane Storage
16) Playing Chess
17) Cooperative Play School Band
18) Cooperative Play Spreading Mulch

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Dr. Martin Luther King, Jr. Charter School for Science and Technology — Spring 2007
**Goals**

1. Transition of play opportunities from younger to older.
2. Pre-K, Primary, and Intermediate areas each have soft surface, grassy area, hard surface games, and traditional play equipment.
3. Play equipment should provide opportunities for both mental and physical development.

---

### Information of Type and Size

<table>
<thead>
<tr>
<th>Type of Equipment or Activity</th>
<th>Categories of Play</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Basketball</td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>2 Soccer / Football Field</td>
<td></td>
<td>(1) Full-sized regulation field</td>
</tr>
<tr>
<td>3 Four Square</td>
<td></td>
<td>(3) Primary (2) Intermediate</td>
</tr>
<tr>
<td>4 Tetherball</td>
<td></td>
<td>(3) Primary (2) Intermediate</td>
</tr>
<tr>
<td>5 Hop Scotch</td>
<td></td>
<td>(2) Pre-K (2) Intermediate</td>
</tr>
<tr>
<td>6 Tennis Court</td>
<td></td>
<td>(1) Joint-use with basketball court</td>
</tr>
<tr>
<td>7 Swings</td>
<td></td>
<td>8 bays (12 swings), 2 bays (4 swings) E.C.E.</td>
</tr>
<tr>
<td>8 Sand Box</td>
<td>(1) Pre-K</td>
<td>(1)</td>
</tr>
<tr>
<td>9 Pre-K Play Set</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>10 Intermediate Play Set</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>11 Primary Play Set</td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>12 Boulders</td>
<td></td>
<td>Arranged informally throughout the site</td>
</tr>
<tr>
<td>13 Hills and mounds</td>
<td></td>
<td>Located along perimeter areas as buffers</td>
</tr>
<tr>
<td>14 Climbing walls</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>15 Balance Beams</td>
<td>(2)</td>
<td>(2)</td>
</tr>
<tr>
<td>16 Physical Fitness Course</td>
<td>(1) Located in natural area</td>
<td></td>
</tr>
<tr>
<td>17 Track</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>18 Shuffleboard</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>19 Free Play Grassy Area</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>20 Water Play</td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>21 Baseball backstop</td>
<td></td>
<td>(1)</td>
</tr>
</tbody>
</table>
## Preliminary Cost Estimate Dr. MLK Jr Charter School
### Spring 07' - Fall 08'

Date: May, 2007

### Construction Costs

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
**Project Start Up** |  |  |  |  
Purchase church sites | LS | $150,000.00 | 1 | 150,000.00
Survey | LS | $4,500.00 | 1 | 4,500.00
Permitting and Barricading | LS | $5,000.00 | 1 | 5,000.00
Slaking and Layout | LS | $2,400.00 | 1 | 2,400.00
Temporary Const. Fencing | LF | $2.00 | 2500 | 5,000.00
**SUBTOTAL** |  |  |  | $166,900.00

### Demolition

| Category | Unit | Unit Cost | Quantities | Total Cost |
--- | --- | --- | --- | ---
Clear and Grub | SF | $0.08 | 103125 | 8,250.00
Sawcut Concrete | LF | $2.50 | 1200 | 3,000.00
Remove and relocate parking light poles |  |  |  |  
Remove Concrete | SF | $0.75 | 85625 | 64,218.75
Remove Concrete Curb and Gutter | LF | $3.00 | - | -
Remove Drive Apron | SF | $1.50 | - | -
Remove and relocate parking lot lights | EA | $2,500.00 | - | -
Remove Church outbuildings | LS | $5,000.00 | 1 | 5,000.00
Relocated church | LS | $15,000.00 | 1 | 15,000.00
Remove Chain Link Fence | LF | $0.50 | 640 | 320.00
Remove Bench | EA | $100.00 | 3 | 300.00
Remove Basketball Goal | EA | $200.00 | 3 | 600.00
Remove Basketball Goal | EA | $400.00 | 2 | 800.00
Remove Tetherball Pole | EA | $100.00 | - | -
Remove Rubber Surfacing | SF | $1.00 | 2800 | 2,800.00
Remove and stock pile covered walkway | LF | $15.00 | 12000 | 18,000.00
Remove and relocate gateway | LS | $2,500.00 | 1 | 2,500.00
Misc Demolition | LS | $1,000.00 | 3 | 3,000.00
**SUBTOTAL** |  |  |  | $120,668.75

### Earthwork and Drainage

| Category | Unit | Unit Cost | Quantities | Total Cost |
--- | --- | --- | --- | ---
Import Fill | CY | $20.00 | 500 | 10,000.00
On-Site Earthwork | LF | $6.00 | 200 | 1,200.00
Concrete Pan, 3' width | LF | $20.00 | 100 | 2,000.00
Walk Chase | LF | $100.00 | - | -
Clean Out Existing Inlet | EA | $1,000.00 | 3 | 3,000.00
Jet Existing Storm Lines | LS | $1,000.00 | 1 | 1,000.00
Lower/Raise Existing Inlet | EA | $1,200.00 | 2 | 2,400.00
Inlet and Grate | EA | $2,400.00 | 2 | 4,800.00
Dry Well | EA | $900.00 | 9 | 8,100.00
Repair underground lines | LS | $2,500.00 | 1 | 2,500.00
4" Perf PVC Drainage Pipe | LF | $7.00 | 150 | 1,050.00
4" PVC Drainage Pipe | LF | $6.00 | 200 | 1,200.00
6" PVC Drainage Pipe | LF | $10.00 | 200 | 2,000.00
8" PVC Drainage Pipe | LF | $14.00 | 200 | 2,800.00
**SUBTOTAL** |  |  |  | $32,450.00

### Site Work

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
Maze | EA | 1700 | 1 | 1,700.00
Map Striping | EA | $1,200.00 | 3 | 3,600.00
Tetherball Striping | EA | $150.00 | 5 | 750.00
Hopscotch Striping | EA | $100.00 | 3 | 300.00
Basketball Court Striping | EA | $400.00 | 2 | 800.00
Shuffle board Striping | EA | $150.00 | 2 | 300.00
4-Square Striping | EA | $150.00 | 5 | 750.00
Decorative Striping ($500-2000, varies) | EA | $1,000.00 | 4 | 4,000.00
**SUBTOTAL** |  |  |  | $12,298.00

### Concrete

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
Concrete Flatwork, 4" depth | SF | $3.80 | 8500 | 32,300.00
Concrete Flatwork, 6" depth (parking) | SF | $4.25 | 13000 | 55,250.00
Concrete Color Hardener | SF | $2.50 | 4000 | 10,000.00
Integral Color for Concrete | SF | $5.00 | 4000 | 20,000.00
Sandblasting with Stain ($500-2000, varies) | LS | $1,500.00 | 2 | 3,000.00
Concrete Edger, 6"x6" | LF | $12.00 | - | -
Concrete Stairs | SF | $50.00 | - | -
Concrete Curbs, 8"x24" at EWF | LF | $24.00 | 300 | 7,200.00
Concrete Curbs, 12"x24" at EWF w/ fence | LF | $26.00 | - | -
Concrete Curbs, 8"x18" at PIP | LF | $22.00 | - | -
Concrete Curbs, 12"x30" at Sand | LF | $28.00 | - | -
Concrete Retaining Wall with Footing | FF | $45.00 | - | -
Concrete Wall w/ Stone Veneer & Footing | FF | $70.00 | - | -
Concrete Sealant, 12" w x 16" ht, stemwall | LF | $48.00 | 200 | 9,600.00
Sandstone Wall Cap, 3" thick | LF | $15.00 | - | -
Concrete Sidewalk Ramp | EA | $650.00 | - | -
Concrete Ramp at Play Pit | EA | $1,000.00 | 2 | 2,000.00
**SUBTOTAL** |  |  |  | $139,350.00

### Masonry

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
Modular Block Retaining Wall | FF | $22.00 | - | -
Dry Lay Sandstone Retaining Wall | FF | $30.00 | - | -
Brick Pavers, w/ sand bed & geo-fabric | SF | $8.00 | 3000 | 24,000.00
Sandstone Bench, snap cut 6x18x18 | EA | $380.00 | - | -
Sandstone Bench, snap cut 18x18x18 | EA | $250.00 | - | -
10' Brick Shelter/GateWay Column | EA | $2,300.00 | - | -
**SUBTOTAL** |  |  |  | $24,000.00

### Soft Surfaces

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
Synthetic Turf (pre K area) | SF | $8.00 | 700 | 5,600.00
Crusher Fines, 4" depth over geo-fabric | SF | $1.80 | - | -
Crusher Finest Stabilizer | SF | $1.00 | - | -
Edging, plastic lumber | LF | $5.00 | - | -
Edging, plastic standard | LF | $3.00 | - | -
**SUBTOTAL** |  |  |  | $5,600.00

### Metal

**Category** | **Unit** | **Unit Cost** | **Quantities** | **Total Cost**
--- | --- | --- | --- | ---
Guardrail, powder coated ($90-130, varies) | LF | $110.00 | - | -
Handrail, standard powder coated | LF | $40.00 | - | -
Decorative Fence Panel, 4 ft | LF | $130.00 | 50 | 6,500.00
Shade Structure with shade sails | EA | $25,000.00 | 1 | 25,000.00
Chain Link Fence, 4' ht vinyl coated | LF | $24.00 | 100 | 2,400.00

---

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<table>
<thead>
<tr>
<th>Project Start Up</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain Link Fence, 6 ft vinyl coated</td>
<td>LF</td>
<td>$32.00</td>
</tr>
<tr>
<td>Chain Link Gate, 4'-0&quot; width</td>
<td>EA</td>
<td>$800.00</td>
</tr>
<tr>
<td>Gate, 10'-0&quot; wide double swing</td>
<td>EA</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>Bollard</td>
<td>EA</td>
<td>$500.00</td>
</tr>
<tr>
<td>decorative fencing for courtyard</td>
<td>EA</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>Backstop with Hood</td>
<td>EA</td>
<td>$9,000.00</td>
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<tr>
<td><strong>SUBTOTAL</strong></td>
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<table>
<thead>
<tr>
<th>Recreation Play Equipment</th>
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<tbody>
<tr>
<td><strong>Play Equipment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre K-B143 Play Structure amendments</td>
<td>LS</td>
<td>$7,000.00</td>
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<tr>
<td>Primary Play Structure</td>
<td>LS</td>
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<tr>
<td>Intermediate Play Structure</td>
<td>LS</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>2-Bay Swings</td>
<td>EA</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>3-Bay Swings</td>
<td>EA</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>4-Bay Swings</td>
<td>EA</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>5-Bay Swings</td>
<td>EA</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Climbing Wall, prefabricated</td>
<td>EA</td>
<td>$12,000.00</td>
</tr>
<tr>
<td>Climbing Wall, custom</td>
<td>FF</td>
<td>$900.00</td>
</tr>
<tr>
<td>Asphalt, 4' depth track</td>
<td>EA</td>
<td>$4.00</td>
</tr>
<tr>
<td>Track Crusher Fines Stabilizer</td>
<td>SF</td>
<td>$1.00</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td></td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>Play Surfacing</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Poured-In-Place Rubber</td>
<td>SF</td>
<td>$16.00</td>
</tr>
<tr>
<td>EWF Surfacing at ECE</td>
<td>SF</td>
<td>$2.80</td>
</tr>
<tr>
<td>EWF Surfacing at Intermediate</td>
<td>SF</td>
<td>$2.80</td>
</tr>
<tr>
<td>EWF Surfacing at Swings</td>
<td>SF</td>
<td>$2.80</td>
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<tr>
<td><strong>SUBTOTAL</strong></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Interactive Areas</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>weather station with remote read out</td>
<td></td>
<td>$2,135.00</td>
</tr>
<tr>
<td>The Hills - upland forest</td>
<td>SF</td>
<td>$8.00</td>
</tr>
<tr>
<td>Landscape pockets - Butterfly, Habitat, Cultural</td>
<td>SF</td>
<td>$5.00</td>
</tr>
<tr>
<td>Outdoor classroom, informal, 20 students</td>
<td>EA</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>Central Plaza, formal, 60 students</td>
<td>EA</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Boulder Field, 150 sf, crusher fines</td>
<td>EA</td>
<td>$3,000.00</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Art Elements</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner Pole</td>
<td>EA</td>
<td>$850.00</td>
</tr>
<tr>
<td>Mural (courtyard &amp; claiborne)</td>
<td>EA</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>Artist in Residence (7k.sem)</td>
<td>EA</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>Administer Art Program per semester</td>
<td>EA</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Tile Project</td>
<td>LS</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Energy Sculpture (kinetic/solar)</td>
<td>EA</td>
<td>$3,750.00</td>
</tr>
<tr>
<td>Game Tables</td>
<td>EA</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>PreK alligator drum, painted and sealed</td>
<td>EA</td>
<td>$1,986.00</td>
</tr>
<tr>
<td>Children African Dance Drums</td>
<td>EA</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Gateways ($5000-12,000, varies)</td>
<td>LS</td>
<td>$10,000.00</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Furnishings &amp; Athletic Equipment</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Picnic Table</td>
<td>EA</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EA</td>
<td>$645.00</td>
</tr>
<tr>
<td>Bench, 6' with back</td>
<td>EA</td>
<td>$950.00</td>
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| Grand TOTAL | | | **$1,371,004.14** |
Safe Play Spaces to Increase Physical Activity in Inner-City Children: A Pilot Study of an Environmental Intervention

Abstract

Objectives. To evaluate the effect of providing a safe play space on inner-city schoolchildren's physical activity.

Methods. In one of two matched neighborhoods, we opened a schoolyard and provided attendants simply to ensure children's safety. Over the next two years we directly observed the number and physical activity levels of children in the schoolyard as well as in the surrounding intervention and comparison neighborhoods. We also surveyed children in the intervention and comparison schools regarding sedentary activities.

Results. During the school year, a mean of 71.4 children used the schoolyard on weekdays and 25.8 on weekends; when observed 66% of these children were physically active. After the schoolyard was opened the number of children outdoors and physically active was 84% higher in the intervention neighborhood than the comparison neighborhood. Surveys showed declines in the intervention school relative to the comparison school in children reporting watching television, watching movies/DVDs, or playing video games on weekdays.

Conclusion. Providing a safe play space was followed by a relative increase in children's physical activity and holds promise as a simple replicable intervention.

Introduction

The prevalence of overweight is rising rapidly in children. Among African-Americans the problem is more severe, with 21.8% of children age 12-19 overweight. The relationship between inadequate physical activity and weight gain is strong and consistent. In spite of national recommendations for greater physical activity, the amount of physical activity practiced by American children remains low.

There is increasing evidence that features of the physical and social environment influence levels of physical activity. A sense of safety of the neighborhood appears to be one important environmental determinant. Adults who perceive their neighborhoods to be unsafe are substantially more likely to be physically inactive than adults who perceive their neighborhoods as safe. Outdoor safety is especially important for children, because their time spent outdoors has been shown to be strongly associated with physical activity. Parents of young children rank safety as the most important factor in determining whether they will allow them to play in a given location. A recent study found that children whose parents perceived their neighborhoods to be particularly unsafe were more than four times as likely to be obese as children whose parents perceived their neighborhoods to be safe. Changes in family structure and work have accentuated the impact of neighborhood safety on physical activity. The
proportion of children whose mothers are employed outside the home has increased in recent decades. While pre-school children whose mothers work often attend structured day care centers or are cared for by relatives, 23% of school-aged children whose mothers are employed outside the home are left alone during after-school hours. One multi-site study found that when children are in self-care, their most frequent activity is watching television, a sedentary activity strongly associated with obesity. In recognition of the need for more opportunities for physical activity for children, the Institute of Medicine has recommended that schools be used as community centers for physical activity during after-school hours.

In spite of the recognition of environmental effects, there have been very few interventions developed that have been demonstrated to increase physical activity or reduce obesity in children by changing the environment. We implemented a pilot intervention in which we provided a safe play space in a low-income inner-city neighborhood and evaluated its impact on physical activity of children.

Methods
Setting
The study took place in two low-income neighborhoods in New Orleans that were approximately one mile apart but were separated by a canal. The intervention and comparison neighborhoods were similar in the 2000 census in median household income ($19,185 vs. $21,297), percent African-American (99% vs. 90%), and percent of households headed by females (both 37%). The intervention neighborhood had a slightly lower population density (10,144 vs. 14,717 residents per square mile). Each neighborhood had a district public elementary school containing a schoolyard that before the study was locked when the school was not in operation. The catchment districts for the two schools were such that nearly all students lived within one-half mile of their respective neighborhood school. The intervention school taught children in pre-Kindergarten through 6th grades and the comparison school pre-Kindergarten through 5th grades. In both schools greater than 99% of the children were African-American. The intervention school had a higher "school performance score" (69.6 vs. 38.3), a composite measure based on standardized test scores and attendance for which the highest-performing schools in the city scored 130.

Intervention
The intervention took place between April 2003 and May 2005 and consisted of providing a safe, supervised space (the schoolyard) in which children could engage in free play. On days when school was in session, the schoolyard was open from school dismissal time, usually 3:00 pm, until 5:30 pm or dark. It was open on Saturdays 10:00 am – 3:00 pm, and on Sundays 12:00 pm – 3:00 pm until April 2004, when the Sunday session was discontinued because of low attendance. During the summer of 2003, the schoolyard was open on the same days and hours as it was during the school year; during the summer of 2004, the schoolyard was open on this same schedule until it was closed on July 10, reopening at the beginning of the next school year. The comparison school's schoolyard remained locked during the study until January 2005 when another program began to use that location for a small limited-enrollment after-school program.

Any child between the second and eighth grades, or in Kindergarten or 1st grade accompanied by an older sibling or parent, who had written parental permission was allowed to use the intervention schoolyard during its hours of operation, regardless of whether he or she attended the school. No fees were charged. Children were required to check in with an attendant upon entering the yard each day to verify parental permission, but afterward could enter and exit freely. Three to four attendants (almost all of whom were teachers) were paid to prevent fights or bullying among children, prevent vandalism or theft of recreational equipment, and prevent adults or children outside of the designated age range from entering the schoolyard, but they did not organize, require, or even suggest specific activities to children. Parents could accompany their children in the yard, but almost none did. Liability concerns were addressed by the project purchasing additional liability insurance for the school, at a cost of $550 per year. The cost for 12 months of salaries for all of attendants and a custodian when school was not in session was $49,000, which was paid by the research project.

The intervention schoolyard was approximately 5,800 square meters in size. It included an installed play structure with impact-absorbent surfacing, large paved areas in which basketball hoops were stationed and a four-square court was painted, and an open grassy field. The project provided and maintained ample sports equipment such as footballs, basketballs, playground balls, hula hoops, jump ropes, Frisbees, and parachutes. A CD player/radio was also provided to supply music for dancing, and a sprinkler was installed during the summer months.

Evaluation
Attendance – The number of children using the schoolyard was taken from attendance records kept by schoolyard staff.

Physical activity - The number and physical activity levels of children in the schoolyard and in the neighborhoods surrounding each school were measured by direct observation. Observations occurred after school on five randomly selected weekdays and four randomly selected weekend days during a 4-week period before the intervention began and during each quarter throughout most of the intervention period (April 2003 – October 2004). During the last two quarters (November 2004 – January 2005 and February – April 2005) observations were increased to ten randomly selected weekdays (two for each weekday) and two randomly selected Saturdays.

The physical activity of the children in the schoolyard during the designated hours was assessed using a modified version of the System of Observing Play and Leisure Activity in Youth (SOPLAY). It is based on momentary time-sampling in which periodic scans in a target area are made according to an established schedule. At each scan and in each target area, counts are made of the number of children engaging in each of three different levels of physical activity: sedentary (lying, sitting, or standing), walking, or very active (e.g. running, jumping rope, climbing on play equipment). Using mechanical counters mounted on boards, two observers independently made counts of boys and girls at each activity level; their results were averaged.
To measure any effect of the intervention on activity of children in the neighborhood surrounding the schoolyard, we developed a modification of SOPLAY for measuring physical activity of children in neighborhoods. For each neighborhood we defined a “Neighborhood Measurement Area” of 8 blocks by 8 blocks (approximately 2/3 mile by 2/3 mile) that surrounded the school; the areas approximated two census tracts in the intervention area and three census tracts in the control area. In each Neighborhood Measurement Area, a driver and an observer drove at 10 mph or slower on standard routes that traversed every street oriented North-South. An observer in the passenger seat identified children outdoors on the streets driven and on the cross-street blocks to the east of all intersections. Children playing in back yards could not be observed and were thus not included in the measurement. Each identified child who appeared to be in the target age range (2nd through 8th grade) was counted and coded according to the child’s activity level. In the comparison neighborhood, the areas observed included the comparison schoolyard. To control for the effect of weather on outdoor activity, observations occurred simultaneously in the intervention and comparison neighborhoods, as well as in the intervention schoolyard. To control for inter-observer bias, three observer teams were rotated among the neighborhoods and intervention schoolyard. To assess the inter-observer reliability of the method, we conducted sixteen paired observations from the same car driving through intervention and control neighborhoods; the intraclass correlation coefficient of the observers’ counts of active children was 0.962.

Sedentary activities – To assess the effect of the intervention on sedentary activities, we conducted annual self-report surveys of children. For practical reasons, these surveys were conducted with students enrolled in the elementary schools in the intervention and comparison neighborhoods, so only children in the 2nd through 5th grades were included. All children in these grades who had written parental consent to be included in the measurement and were available in school were surveyed. Surveys were administered simultaneously in intervention and comparison schools on Tuesdays in March or April, and students were asked about activities during the previous afternoon/evening, on the previous Saturday morning and on the previous Saturday afternoon/evening. We used the procedure and questions developed by Robinson for 3rd- and 4th-graders17; for each activity, children coded their time spent on a nine-level semi-quantitative scale ranging from “none” to “6 hours or more”.

Body composition – We measured height, weight, and an estimate of body fat using bioelectrical impedance analysis (BIA) before the intervention began (in February 2003) and again in May 2004 and May 2005. Children included in the measurements were those in 2nd through 5th grades in the schools in intervention and comparison neighborhoods. BIA measurements were performed with the Quantum II Body Composition Analyzer (RJL Systems), following procedures used by Houtkooper et al21. Children were measured supine in the late morning or early afternoon. Informed consent procedures for human subjects were followed according to guidelines established by the Institutional Review Board of Tulane University; parents or guardians of children returned a form specifically stating whether or not they wanted their children to participate.

Data analysis
To assess the relationship between time period (before vs. after the intervention began) and neighborhood (intervention vs. comparison), in the number of children outdoors and physically active, we calculated p-values using chi-square tests and calculated confidence intervals for the differences in the number of children observed using paired t-tests. Data from self-reported surveys on time spent in sedentary activities were dichotomized into any time versus no time. To assess changes in means for body mass index (BMI) and body composition in the serial cross-sectional samples we used analysis of variance. For the children who were measured at baseline and again two years later we conducted a two-sample t-test comparing the intervention and comparison schools for the change in BMI over the two years.

Results
Participation
The schoolyard was immediately popular upon opening. Attendance varied little by season but did vary substantially with whether school was in session. During the school year, attendance was higher on the weekdays (71.4) than weekends (25.8); during the summer, the mean attendance was 27.8 on weekdays and 14.2 on weekends. Approximately 80% of children using the yard were in grades 2-5; 18% were in grades 6-8, and the remainder were younger siblings in Kindergarten or 1st grade. Attendance was nearly equal in boys (50.5%) and girls (49.5%). During the 12 months that included the 2003-04 academic year and following summer, a total of 710 children attended the schoolyard at least once, of which 506 (71%) were enrolled at the intervention school and the remainder attended other schools. Only one child from the comparison school visited the intervention schoolyard, and he visited one day only. Of the 379 children enrolled in grades 2-5 in the intervention school in the 2003-04 school year, 283 (75%) visited the schoolyard at least one time over 12 months, and among these students, the mean number of days attended over 12 months was 32 (median 22).

Physical activity in the schoolyard
Of the children observed in the schoolyard, 33% were recorded as “very active” and 33% as “walking”, for a total of 66% who were physically active when observed. Interestingly, this did not differ by sex (66% of boys and 67% of girls were active).

Physical activity in the neighborhoods
Data on observed activity in the neighborhoods surrounding
the schoolyard as well as the intervention schoolyard itself are shown in Table 1. In the four weeks before the intervention began, the mean number of children per day observed to be outdoors and physically active (i.e., categorized as “walking” or “very active”) in the intervention neighborhood was 3% lower than in the comparison neighborhood (65.1 vs. 67.4). After the intervention began, the mean number of children observed outdoors was lower in both neighborhoods, but in each of these eight quarters the number of active children was greater in the intervention neighborhood (exclusive of the schoolyard) than in the comparison neighborhood; for all eight quarters combined we observed 30% (CI 18%, 43%) more active children in the intervention neighborhood (50.4 vs. 38.7, p < .0001). For the entire intervention period, 84% (CI 66%, 101%) more children were outdoors and active in the intervention neighborhood and schoolyard combined than in the control neighborhood (71.1 vs. 38.7, p < .0001).

**Sedentary activities**

Table 2 shows data on consent to participate in surveys regarding sedentary activities and anthropometry at baseline and the two follow-up measurement periods for children in the schools in the intervention and comparison neighborhoods. Consent was provided by parents for 67%-81% of enrolled children. Of those for whom consent was provided, 90% or more were surveyed and 92% or more measured. Data on trends in self-reported sedentary activities the day before the survey are shown in Figure 1A-C. At baseline, children in the intervention school were more likely to report most types of sedentary activities, but over the two follow-up surveys, children in the comparison school tended to show an increase in sedentary activities, while children in the intervention school tended to show a decline. For example, from baseline to the two-year follow-up surveys, the percentage of children reporting watching movies or DVDs increased from 38% to 42% in the intervention school and fell from 36% to 32% in the comparison school (p = .004), and the percentage of children reporting playing video games increased from 55% to 61% in the comparison school and fell from 42% to 48% in the intervention school (p = .001). These changes were greater in the second year of follow-up than the first and achieved statistical significance only after the second follow-up year. Changes in computer use, homework, and reading were not statistically significantly different across the surveys between schools.

**Body composition**

From the baseline to the 2-year follow-up measurement there were increases in both the comparison and intervention schools in children’s mean body weight (3.89 vs. 2.04 Kg) and BMI (1.12 vs. 0.32). These changes were not statistically significantly different between intervention and comparison schools after controlling for age and gender (p > .40). Similarly, there were no significant differences between schools in the increase in fat mass or percent body fat (Table 3). A cohort of 160 2nd and 3rd grade children were enrolled in the study at baseline and were measured again two years later. In this embedded cohort the mean BMI change was 2.25 in the intervention school and 2.39 in the comparison school (p = .68).

**Discussion**

In this pilot project, we found that when a safe play space was made available within a low-income residential neighborhood, many children used it for free play and most of those using it were physically active. We also found a substantial (84%) increase in the total number of children outdoors and physically active in the intervention area relative to the comparison area, and evidence to suggest that the intervention may have reduced time spent in sedentary activities. Overall the project provides additional evidence that perceived lack of neighborhood safety may be an important determinant of physical activity in children and suggests that physical activity levels of low-income urban children may be increased through simple environmental interventions that provide safety. Several research groups have demonstrated that by engaging children in organized physical activity programs they can increase their physical activity levels, and some of these interventions have been followed by reductions in body fat in intervention children compared to children in comparison groups. However, these interventions are generally complex and require substantial training and oversight of staff. There is a need to develop additional models for promotion of physical activity at the community level that are less complex to implement and are sustainable. Our intervention was simple to implement and required almost no staff training. While it cost our project $49,000 per year, we believe it could be implemented for less than this in many schoolyards by employing fewer staff. Interestingly, the children participating in our project spent a greater proportion (66%) of their time physically active than elementary-school children in other studies participating in standard physical education classes (37%) or in the Child and Adolescent Trial for Cardiovascular Health (CATCH) project (52%). This may be due to the fact that in our project, unlike in organized programs, none of the children’s time was spent in instruction. Besides the many health benefits of active play itself, as well as the potential social benefits of the children spending time with other children, an intervention such as the one in this project can have health benefits if it simply reduces time spent in sedentary activities, particularly watching television. In fact, in one successful school-based intervention to reduce obesity in middle school children, the benefit was found to be almost entirely mediated by a reduction in television watching. We attempted to assess the impact of our intervention on television watching and other sedentary activities through self-report surveys of children. The trends were encouraging, with relative reductions over the course of the study in reports of watching television, watching movies or DVDs, and playing video games. However, it is difficult to draw a firm conclusion from these self-report data because the reductions occurred in the second year after the intervention began, and because much of the relative change appeared to reflect increases in sedentary activities in the comparison school. Our observation data demonstrated a consistent and substantial increase in the number of children outdoors and physically active...
in the intervention neighborhood relative to the comparison neighborhood for the entire intervention period. Interestingly, this relative increase was found even when excluding the number of children in the schoolyard itself. However, we also found a decrease between pre- and post-intervention in the mean number of children active outdoors in both neighborhoods. Weather and other neighborhood environmental factors that change over time are likely to influence outdoor play, and our pre-intervention measurements were made over a shorter period of time than our post-intervention measurements (4 weeks vs. 3 months), during which the weather was particularly pleasant. We are unable to control for time-dependent environmental factors in the pre- vs. post-intervention comparison, but we did control for them in the neighborhood comparison by conducting observations simultaneously in both neighborhoods, thus we believe the inter-neighborhood comparisons are the most valid measures of intervention effect. Nonetheless, future implementations of this intervention should be evaluated with longer baseline periods to better assess its effect over time as well as across a larger number of neighborhoods. These evaluations should also assess any possible “spillover” effect into surrounding neighborhood areas. The relative increases in the number of children playing outdoors in the neighborhood are encouraging. However, the fact that the schoolyard was used by children far more on weekdays than weekends, and more during the school year than during the summer suggests that connection to the school day is important to the success of this intervention.

Our study has clear limitations. First, because it included only one intervention neighborhood and one comparison neighborhood, changes in measures of sedentary activities or outdoor play outside of the schoolyards could have been caused by factors unrelated to the intervention. Second, although our measures of physical activity of children in the afternoons were by direct observation and thus were objective, we did not measure objectively their physical activity during the remainder of the day; our measures of sedentary activities were based on self-report by young children, which have limited validity. Measuring 24-hour physical activity in young children objectively has proven to be difficult, making evaluation of interventions in this age group challenging.36,37

In spite of these limitations, the results of this pilot project are encouraging. Because physical activity levels in children are uniformly low, there is a need to develop interventions that can be applied to large numbers of children at low cost. The simple intervention of providing safe play spaces should be implemented in larger trials and evaluated for its effect on physical activity, sedentary activities, perceived neighborhood safety, and physical activity of children in neighborhoods beyond these play spaces.

Author affiliations
At the time of the study Rebecca Meriwether was with the Tulane University School of Medicine. All other authors are with the Tulane University School of Public Health and Tropical Medicine, New Orleans, LA.

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Contributors
Thomas Farley and Rebecca Meriwether conceived of the project, designed it with the help of other authors, and oversaw the implementation. Thomas Farley and Erin Baker analyzed the data, and Thomas Farley wrote the manuscript. Erin Baker and Liza Watkins managed the intervention and data collection. Carolyn Johnson and Larry Webber provided ongoing advice throughout the project on study design, data collection, and issues regarding conducting research projects in schools. All authors reviewed and commented on drafts of the manuscript.

Institutional Review Board Approval
The protocol for this study was reviewed and approved by the Institutional Review Board of the Tulane University Health Sciences Center.

Acknowledgements
This study was conducted with a grant from the National Heart, Lung and Blood Institute (R01 HL073774). The authors would like to thank Doris Hicks and Pamela Cornelius, without whose assistance the project would not have been possible.

References


Table 1. Observed physical activity in intervention schoolyard, intervention neighborhood, and control neighborhood

<table>
<thead>
<tr>
<th>Quarter/Year</th>
<th>Comparison Neighborhood Mean children per day</th>
<th>Intervention Neighborhood Mean children per day</th>
<th>Intervention Neighborhood vs. Comparison Neighborhood % Difference</th>
<th>Intervention Schoolyard Mean children per day</th>
<th>Intervention Neighborhood + Schoolyard vs. Comparison Neighborhood % Difference</th>
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<tr>
<td>Pre-</td>
<td>Total</td>
<td>Active</td>
<td>Total</td>
<td>Active</td>
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<td>intervention*</td>
<td>10.2%</td>
<td>67.4</td>
<td>97.8</td>
<td>65.1</td>
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<td>81.9%</td>
<td>64.1</td>
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<td>80.0%</td>
<td>57.3</td>
<td>84.0</td>
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<td>61.8%</td>
<td>57.1</td>
<td>66.8</td>
<td>41.3</td>
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<td>25.8</td>
<td>56.9</td>
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<td>98.2</td>
<td>53.6</td>
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<tr>
<td>2nd, 2004</td>
<td>57.5%</td>
<td>40.8</td>
<td>61.8</td>
<td>43.3</td>
<td>8%</td>
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<tr>
<td>3rd, 2005**</td>
<td>73.0%</td>
<td>50.5</td>
<td>92.0</td>
<td>57.5</td>
<td>9%</td>
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* Pre-intervention measurements made over a 4-week period
** Comparison neighborhood figures include mean of 7.0 children per day (5.7 active children per day) observed in comparison schoolyard

Table 2. Consent and participation in surveys and anthropometry at intervention and comparison schools

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<th>2003</th>
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<th>2005</th>
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<td>379</td>
<td>372</td>
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<tr>
<td>Comparison</td>
<td>304</td>
<td>319</td>
<td>319</td>
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<td>Consent (%)</td>
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<td>232(67%)</td>
<td>282(74%)</td>
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<td>282(74%)</td>
<td>234(74%)</td>
<td>309(83%)</td>
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<td>Refused (%)</td>
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<td>27(7%)</td>
<td>24(7%)</td>
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<td>Form not returned (%)</td>
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<td></td>
<td>60(18%)</td>
<td>60(18%)</td>
<td>62(18%)</td>
</tr>
<tr>
<td>Surveyed (% of consented)</td>
<td>257(96%)</td>
<td>208(90%)</td>
<td>270(96%)</td>
</tr>
<tr>
<td>Measured (% of consented)</td>
<td>240(92%)</td>
<td>225(97%)</td>
<td>264(96%)</td>
</tr>
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</table>

Table 3. Body mass and body composition of children in intervention and comparison schools, 2003-2005

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<thead>
<tr>
<th>Year</th>
<th>Change 2005-05*</th>
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<tr>
<td></td>
<td>Intervention</td>
</tr>
<tr>
<td>N</td>
<td>264</td>
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<tr>
<td>Weight (Kg)</td>
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<tr>
<td>BMI (Mean)</td>
<td>19.49</td>
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<td>Fat Free Mass (Mean)</td>
<td>29.23</td>
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<tr>
<td>Fat Mass (Mean)</td>
<td>8.36</td>
</tr>
<tr>
<td>% Fat (Mean)</td>
<td>19.6%</td>
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* None of the changes over time in the intervention school compared to the comparison school are statistically significant (p>0.40 after controlling for age and gender)