

# Design in Action 2011

Locating Education Partners: Science + Math



New York, NY

[salvadori.org](http://salvadori.org)

212.870.3970

# MEET THE PLAYERS

# Who we are

Using the urban landscape of buildings, tunnels, and bridges, the **Salvadori Center** introduces teachers and students to the wonder, beauty, and logic of architecture and engineering.

# What we do

We provide *professional development* for teachers and *project-based learning* experiences for students to master the mathematics, science, art, language, social studies, and technology embedded in our built environment.

Our founder, Mario Salvadori, a world-renowned structural engineer, believed that the built environment held all the knowledge a person needed to be an intelligent and active member of the community.

## Who we work with

- Public and Private Schools (GLOBE and LEAD)
- Teachers (Professional development for educators)
- **Community centers/ After-school programs (BRIDGES)**
- Museums (Family workshops)

**BRIDGES Program =**

**Salvadori Center**

**+**

**New York City Housing Authority (NYCHA)**

**+**

**National Science Foundation (NSF)**

# HOW IT STARTED

# Inception of the program

In the fall of 2008, the Salvadori Center was awarded a \$1.14 million, 5-year grant by the National Science Foundation to initiate BRIDGES [Build, Research, Invent, Design, Grow and Explore through Science], an after-school science education program for 8- to 12-year olds. BRIDGES is run in partnership with the New York City Housing Authority (NYCHA).

BRIDGES is co-taught by Salvadori educators in partnership with NYCHA community center instructors who have undergone an intensive 2-day institute.

After teaching alongside a Salvadori educator for a period of one year, these NYCHA instructors then become the main instructor at their site, with ongoing support and professional development from the Center.

# BRIDGES program goals:

- Target young people ages 8-12 years old enrolled in NYCHA after-school programs
- Improve participants' content understanding in terms of their attitude and interest in STEM learning
- Begin with 5 sites, and add 5 annually, to serve a total of 500 children at 25 NYCHA community centers by Year 5
- Provide strategies for the effective scale up of this locally successful program and introduce it into the other after-school time settings
- In Years 4 and 5, disseminate the program in at least two municipalities outside of NYC

# NAVIGATING FUNDING

# How is the program funded?

The BRIDGES program is fully funded by NSF, this includes:

- Salvadori staff compensation
- All program materials and supplies
- Shipping costs
- Cost of evaluation

# How does it work?

- Principal Investigator
- Evaluations/ research
- Annual Reports
- Cumulative 5-year report

# MAINTAINING A DYNAMIC PARTNERSHIP

# Successes

- In four years, the program has expanded from 5 sites to 20
- Received positive feedback and continual support from community center directors
- Consistent attendance and student engagement
- Empowered NYCHA instructors to be able to teach the program on their own and continue the program at their sites
- Recruited and trained new Salvadori educators and transitioned them into other teaching roles
- Creation of six new curricula specifically for BRIDGES which are now used for all Salvadori afterschool programming

# Challenges

- Lack of funding and staff cuts has prevented NYCHA from filling co-teaching positions
- Providing educators for sites that are not easily accessible by public transportation in the NYC area
- Resources and manpower needed to package and ship mass quantities of materials and supplies to all the sites
- Reliance on educators for collection of necessary data such as consent forms and evaluations
- Disciplinary issues involving youth participants

# Adapting to change

- Hiring of additional educators to supplement NYCHA staffed instructors
- Managing the development and preparation process and creating a realistic timeline
- Experimenting with new ways of collecting data
- Adapting the curricula to meet the learning needs of the target population
- Increased focus on development of classroom management skills

# LOOKING AHEAD

## Where do we go from here?

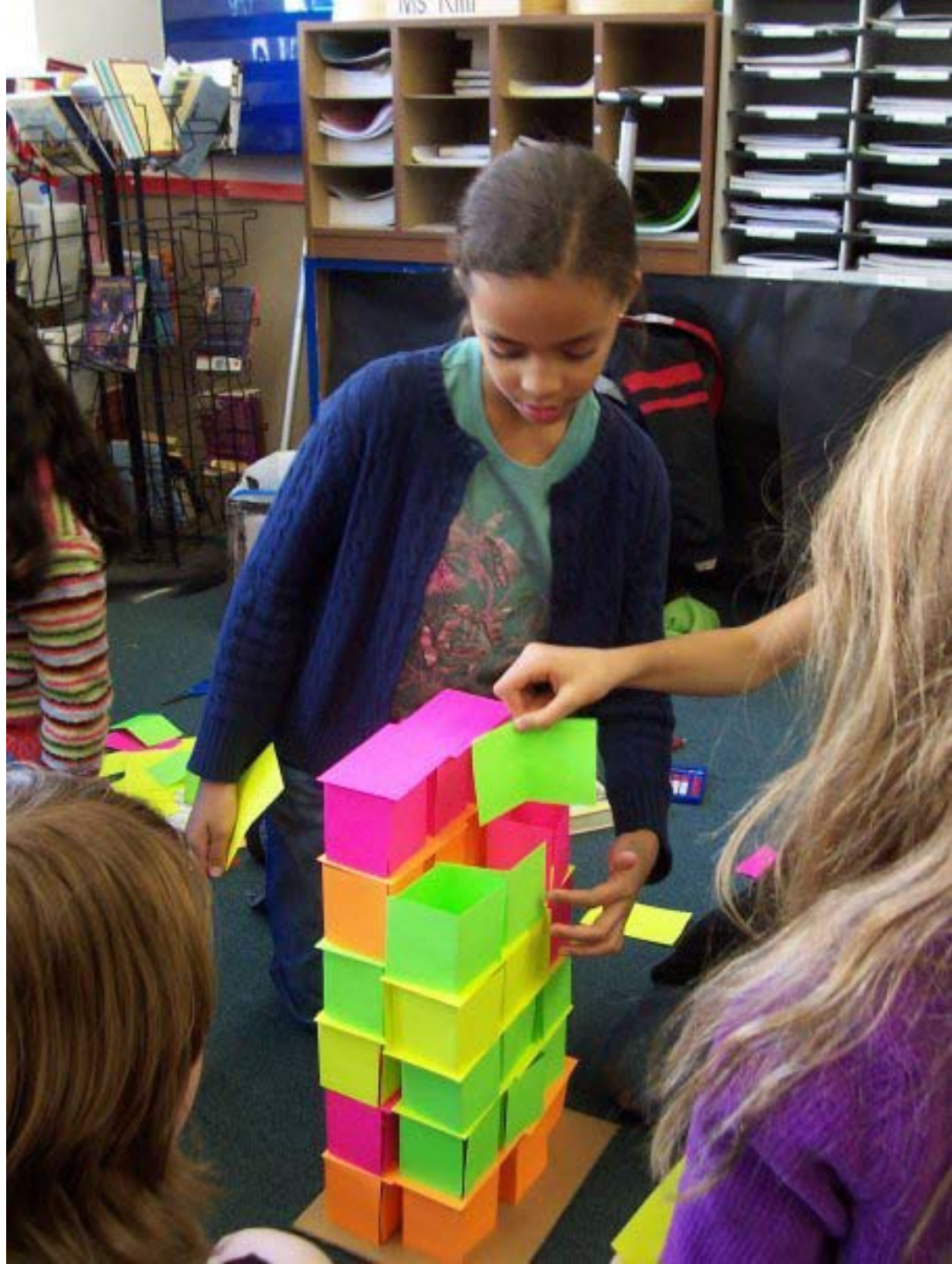
- Developing an afterschool program model that can be duplicated in other afterschool contexts
- Training all part-time and full-time Salvadori staff to teach the program
- Redesigning existing Salvadori programming to follow a similar format
- Applying for an extension of the grant

## What have we learned?

- Be flexible- be ready to change and adapt
- Don't take it personal
- Observe your population- pay attention to what they need- then provide it for them
- Communication is key- build good relationships













Partial Roof

2

OR PLAN







# Architecture Resource Center, Inc.



New Haven, CT

[arcedusa.org](http://arcedusa.org)

860.604.1074

# MEET THE PLAYERS

# Who we are

The **Architecture Resource Center, Inc. (ARC)** is a design arts education organization. We use architecture, design, and engineering to connect academic content to real world problem-solving skills.

Students develop their 21<sup>st</sup> century skills through activities where they learn to think, learn, work, solve problems, communicate, collaborate, and contribute effectively.

# What we do

ARC provides hands-on, creative learning experiences which are participatory, interdisciplinary, and collaborative.

- K-12 School Programs
- Community/Festival Programs
- Advocacy



# Who we work with

- Individual schools and districts
- Social service organizations
- Colleges and universities
- Museums
- Libraries
- Government agencies
- Planning and design firms
- Families

# HOW IT STARTED

# Inception of the program

***Case Study: Design Connection Partnership*** with the New Haven Public Schools (NHPS)

***ARC asked: What do schools in your district need?***

NHPS's original need was for enrichment programs that would support the needs of "at risk" students:

- An emphasis on critical thinking and problem solving
- An emphasis on developing concepts and improving vocabulary
- An appropriate use of the life experiences of the students
- Improved instructional technology
- Experiential learning through field experiences
- Accommodation for various learning styles
- Content integration through the arts

### ***Next Questions:***

- What are the major initiatives of the district?
- Who are the decision makers?
- What do teachers need to make these initiatives work?
- How do curriculum decisions get made?

# Creation of the partnerships

## ***Design Connections® Partnership Members***

- New Haven Museum
- New Haven City Planning
- New Haven architecture & design firms
- Yale University School of Architecture
- Yale Urban Design Workshop
- New Haven Public Schools (NHPS)
- Architecture Resource Center, Inc.

# New Haven Public School Timeline

## Comprehensive Arts Department Elementary Classroom & Art Teachers

**1996**

***Design-A-School***<sup>©</sup>

grade

Week-long master artist residency programs for 5th

students at three schools

**1997-2000**

***Design Connections***<sup>©</sup>

graders

Year-long interdisciplinary design lessons for 1,200 3rd

**1999**

***New Haven Cultural Landscape: Its changing people and places***<sup>©</sup>

An arts and humanities program for all 3rd graders in the district

## **Social Studies Department Grade 5 Classroom Teachers**

**2001**     *New Haven Cultural Landscape*® revised for 1,700 5th grade students and their teachers.

## **Math Department Math Coaches and Grades 3, 4, and 5 Classroom Teachers**

**2009**     *Design Connections*® & *New Haven Cultural Landscape*® learning activities with 4th and 5th graders at one school.

**2010**     *Design Connection Partnership* program piloted with 5th graders from seven schools.

**2011**     *Design Connection Partnership* program expands to fourteen schools and includes three grade levels over three years.

## *Design Connection Partnership Goals*

1. Create ongoing working relationships between NHPS administrators/math coaches/classroom teachers and architects/designer/planners/museum educators/higher education faculty that lead to opportunities for enhanced teaching and learning in the design arts and its allied field of engineering.
2. Integrate sequential and comprehensive design arts learning with learning in other subjects (i.e., math, science) in order to improve teachers' understanding of state standards-based mathematics, science, and technology content and processes.
3. Create state standards-based lesson units that incorporate new teaching strategies to include real world problem-solving design activities, technology resources, primary sources, and experiences with the built environment.
4. Increase students' attitude, interest, and achievement in Science Technology Engineering Mathematics (STEM) learning through innovative inquiry based design arts activities that connect academic disciplines, improve problem-solving skills, introduce 21st century career opportunities; and, foster students' awareness of how their community operates and how they can participate.

# *The Creativity Crisis: Why American Schools Need Design*

*By Laura Seargeant Richardson*

*Science and math are only part of the solution. To stay competitive in a changing world, we need to think with our hands.*

*According to President Obama, American 15-year-olds rank 21st in science and 25th in math compared to their peers around the world. STEM education (Science, Technology, Engineering, and Math) may be fundamentally flawed. STEM proponents should start focusing on creativity, originality, and design thinking.*

This article is available online at:

<http://www.theatlantic.com/life/archive/2011/03/the-creativity-crisis-why-american-schools-need-design/73038/>

Teachers and math coaches are active participants working alongside their students. Through DCP's program structure of experience, performance, and assessment, ARC provides:

- Professional development for math coaches and teachers
- Hands-on, interdisciplinary, design workshops for students
- Planning sessions and individual teacher consultations
- Primary resource workshops and tours at New Haven Museum
- Architectural walking tours of school neighborhoods
- Classroom visits to planning and design offices
- Design activities for families of participants
- Curriculum development with lesson plans and units
- Marketing to education, community, and design audiences
- Exhibits of student design work
- Evaluation on multiple levels and at every step
- Support resources including bibliography and website references
- Art supplies and tools

## Program Outcomes

*Reinvesting in Arts Education*, a report from the President's Committee on Arts and Humanities (May 2011), notes the instrumental outcomes derived from high quality arts education:

- Student achievement, typically as represented by reading and mathematics performance on high stakes tests, including transfer of skills learning from the arts to learning in other academic areas
- Student motivation and engagement, including improved attendance, persistence, focused attention, heightened educational aspirations, and intellectual risk taking
- Development of habits of mind including problem solving, critical and creative thinking, dealing with ambiguity and complexity, integration of multiple skill sets, and working with others
- Development of social competencies, including collaboration and team work skills, social tolerance, and self-confidence

# NAVIGATING FUNDING

# How is the program funded?

## Government

### Federal Agency

National Endowment for the Arts

### State Agencies

CT Commission on the Arts (1963-2003)

CT Commission on Arts, Tourism,  
Culture, History, and Film (2003-2004)

CT Commission on Culture and Tourism  
(2004-2011)

CT Department of Economic and Community  
Development (2011-present)

CT Humanities Council

CT Department of Higher Education



### Local Institutions

New Haven Public Schools

Mayor's Grant

### Community Foundations

### Private Businesses

# How does it work?

## It's a collaborative effort!

- Schools submit grant applications for program
- Partners submit grant applications for program
- Architecture Resource Center submits grant applications for program
- Schools pay a per student fee (\$10-\$20 per student)
- Schools and partners provide in-kind support for supplies, printing, bus transportation, and personnel
- All partners provide letters of commitment
- NHPS signs a jointly developed Memorandum of Understanding.

# MAINTAINING A DYNAMIC PARTNERSHIP

# Successes and Challenges

**For educators involved in a partnership with the ARC long-term successes include:**

- New resources, ideas, and commitment to school improvement goals
- A broader base of support from influential leaders and the community
- Improved teacher morale through new challenges, experiences, and relationships
- Greater opportunities for students to learn about careers, and real world applications of academic subjects
- An interdisciplinary perspective for creative problem solving
- Inquiry-based learning opportunities
- Enrichment of students' career aspirations through interaction with inspiring design professionals

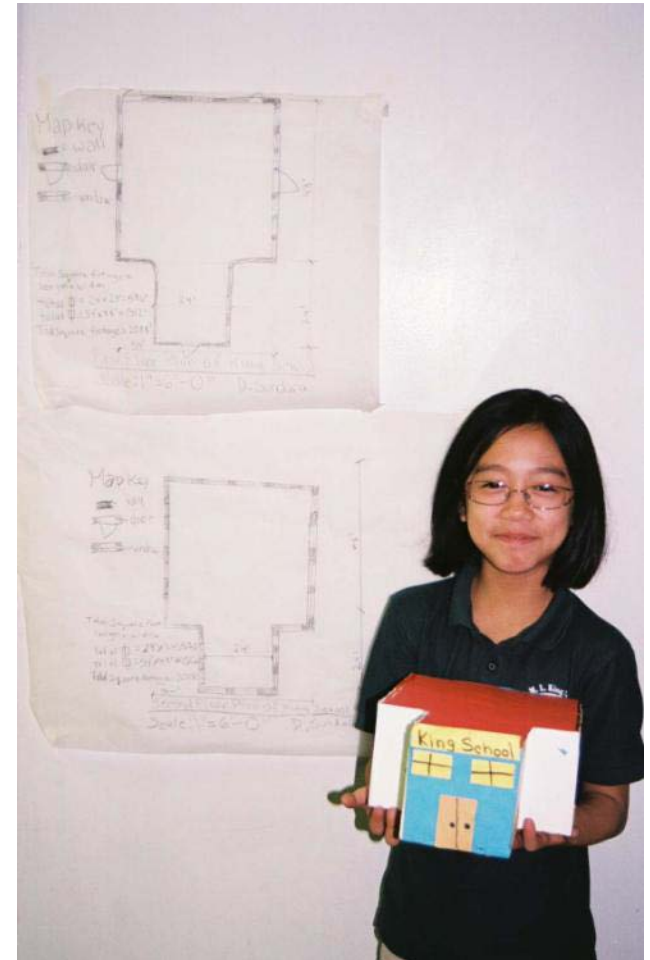
# Rewards for community partners:

- Contributing to increased consumer understanding of the design process and the value of design
- Giving back to the community
- Making a direct impact on education
- Mentoring their own staff for leadership roles



# Challenges

- Professional development scheduling and teacher compensation
- Genuine teacher participation in hands-on learning activities
- Teacher follow-through with evaluation surveys
- Maintaining key contacts, despite retirements and transfers
- Keeping abreast of district priorities
- Funding



# Adapting to change

- Keeping up with current educational initiatives
- Keeping current with funding requirements
- Responding to evaluators' recommendations



# Be creative. Be flexible.

- School scheduling
- Recognizing student and teacher learning styles and abilities
- Bartering materials and supplies



# LOOKING AHEAD

# Where do we go from here?

- Digital media opportunities
- Teacher Preparation College Partnerships

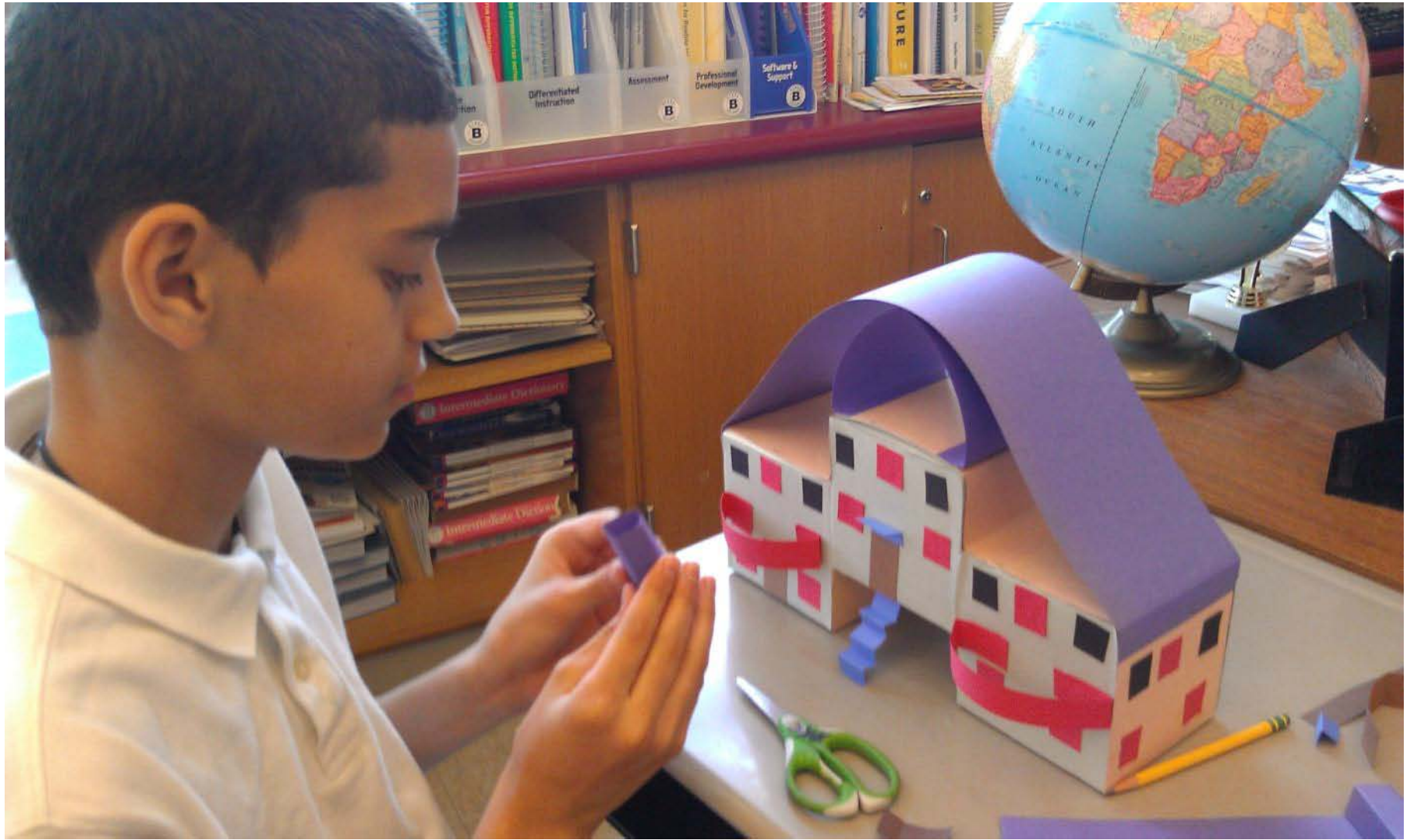


# Expanding our program

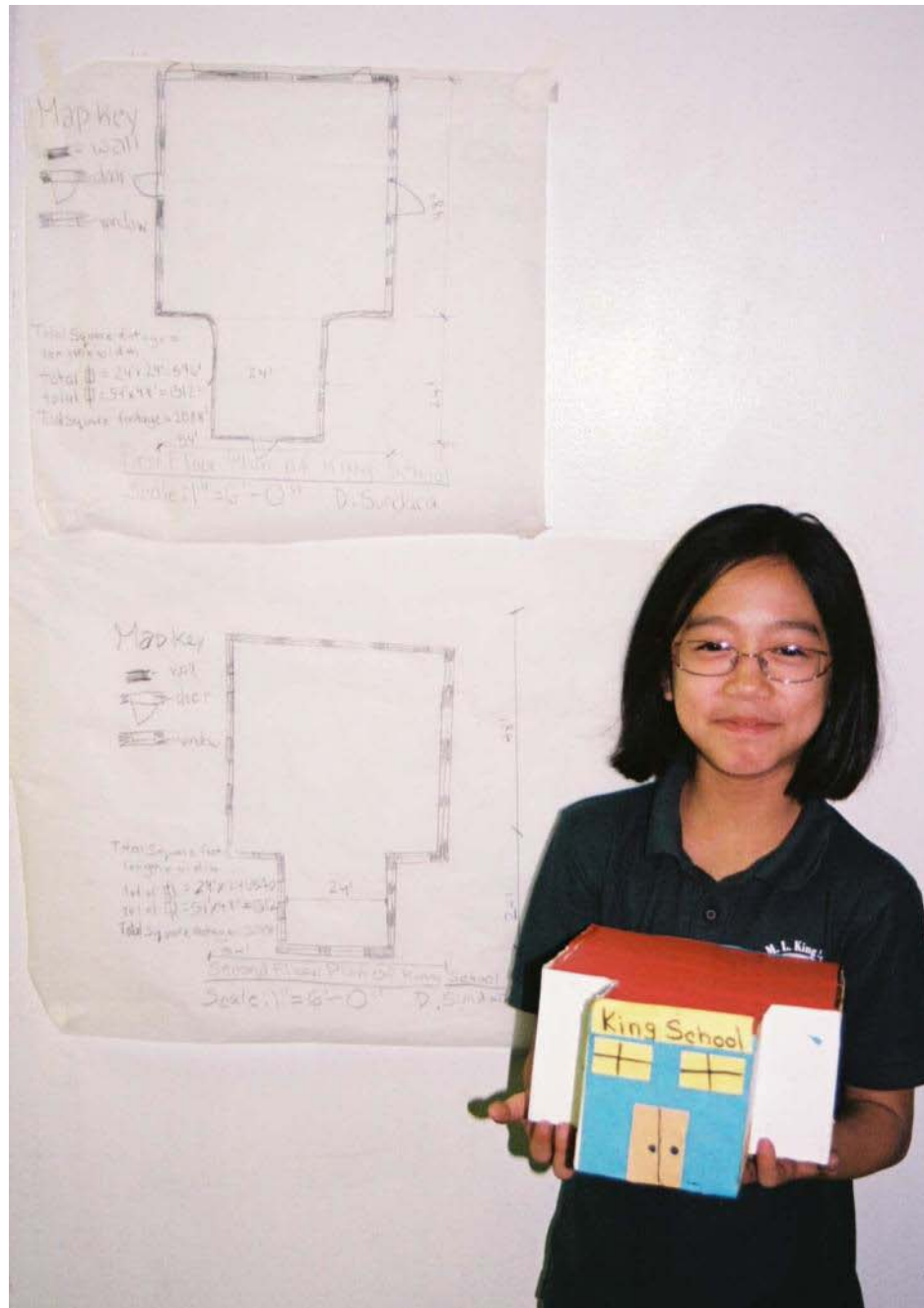
- All K-8 schools in NHPS District
- Strategic targeted districts throughout Connecticut
- Program spin-offs
  - Design Technology Camp
  - Courses at Teacher Colleges and Universities
- Collaborative projects with design education organizations to advance the profession

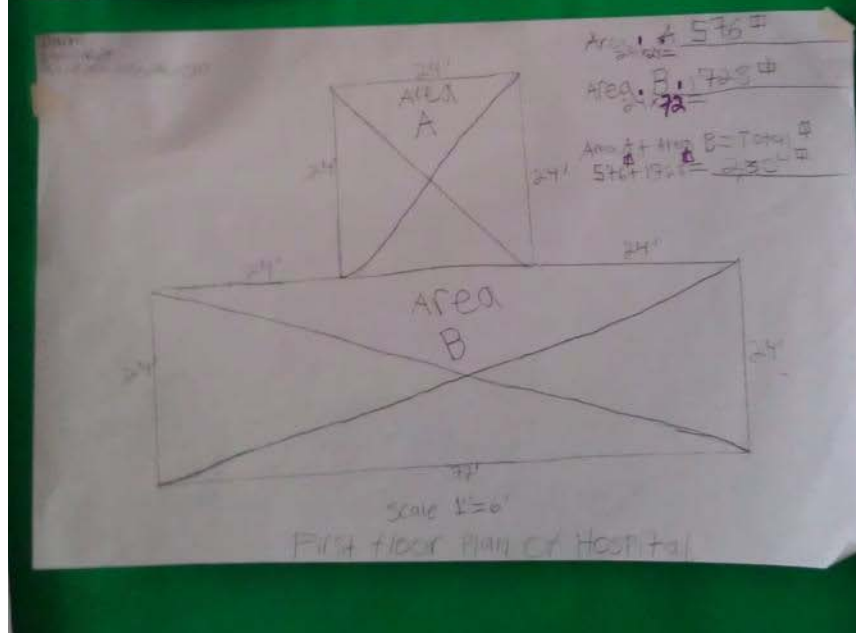
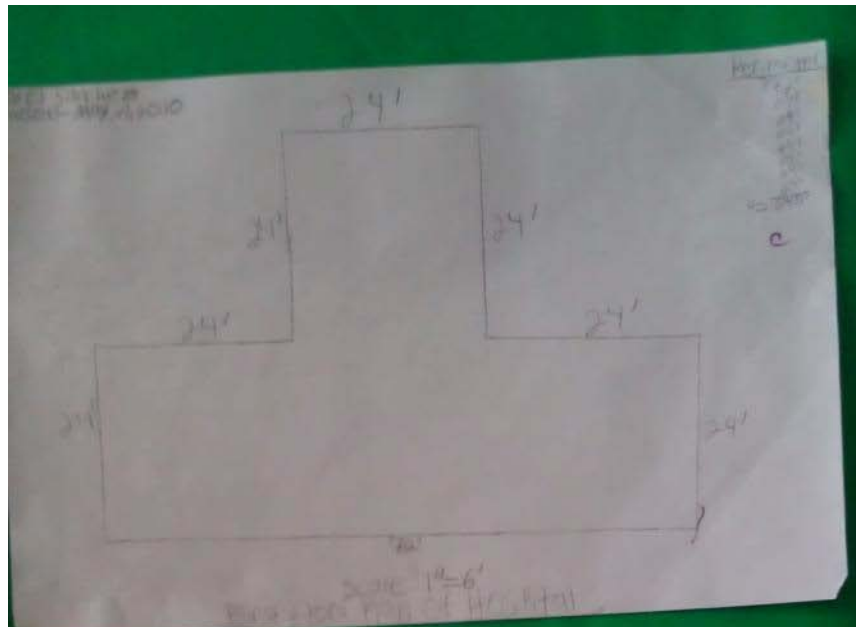
# What have we learned?

- Secure commitment at all levels—families, teachers, principals, and district administrators
- Respect district policies and protocols
- Identify people who will advocate for your work
- Stay relevant—keep abreast of local, state, and national educational initiatives
- Evaluate—manage to outcomes, be responsive
- Find new opportunities for all partners to contribute and grow with the organization
- Provide ongoing professional development for all staff and volunteers
- Start small but think big:
  - Market the programming
  - Invite others to observe your programs
  - Create an outlet to showcase your work









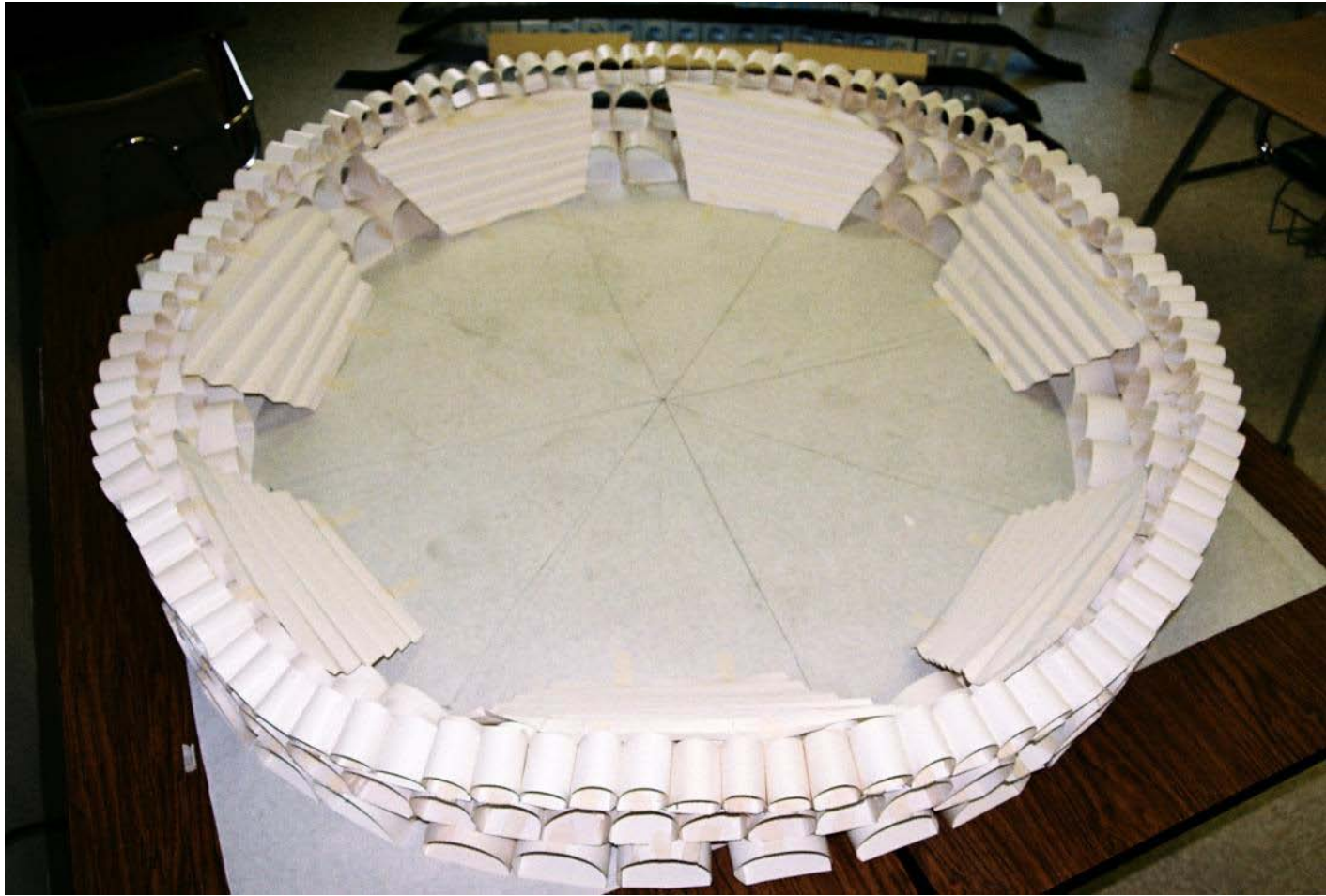


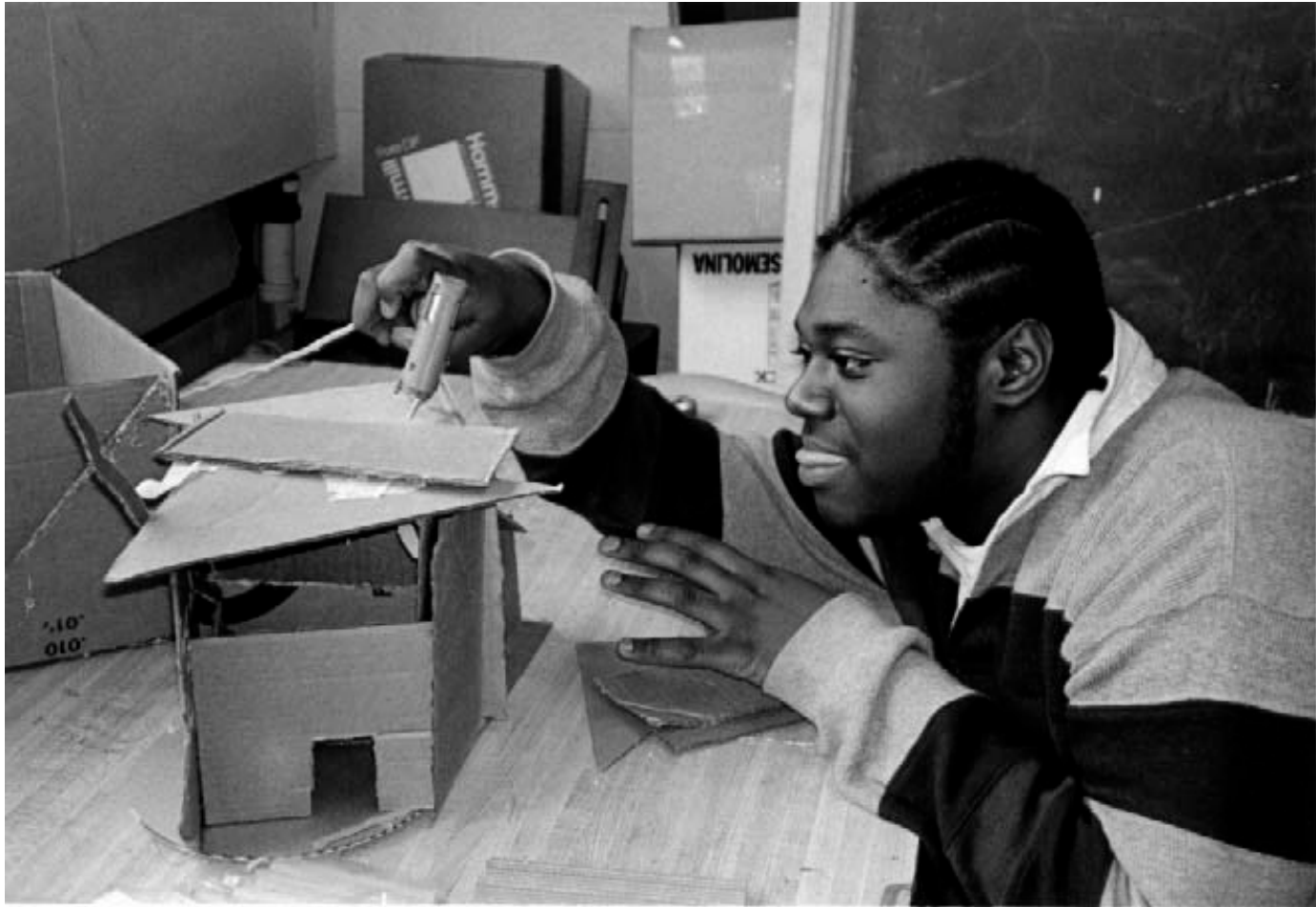














# Questions