CARTER G. WOODSON EDUCATION COMPLEX

Buckingham County Public Schools - Dillwyn, Virginia

2017 SUBMISSION - JAMES D. MACCONNELL AWARD

The Carter G. Woodson Education Complex was named for the great African-American scholar, historian, and public education advocate Carter Godwin Woodson, PhD who was born in Buckingham County, VA in 1875. Comprised of both Primary and Elementary Schools, the Education Complex was planned to serve 1,000 K-5 students from across Buckingham County as a vibrant campus community of learners.

A strong sense of community brought a diverse group of experts together to re-imagine what learning could be for young children with an architecture that shapes their health, wellbeing, and positive social relationships. The collaborative approach between public health researchers, pediatricians, social scientists, educators, children, and designers was anchored around a child's experience and perception of space. Together, the interdisciplinary team brought careful attention to crafting a healthy architecture of finely tuned details that speaks to children's natural joy for exploratory learning.

- **Designing for Health + Learning**

  When the community embraced the proposal to re-design a 40-acre existing school site, they also prioritized health and well-being and set out to create a new paradigm for school architecture, educational theory, and human performance. Facing the opportunity to renovate and expand two mid-century schools, the Buckingham County School District, wanted to ensure the project exemplified their pedagogical vision to cultivate health and "make learning visible" for all learners, teachers, families, and visitors for decades to come.

- **Design Guidelines for Healthy Eating + Active School Environments**

  In conjunction with public health researchers and social scientists, the design and planning process aims to support every child in developing lifelong healthy habits and engaging with his or her learning journey. The collaborative process resulted in Healthy Eating and Physical Activity Design Guidelines for School Architecture, which synthesize research findings in environmental health, environmental psychology, behavioral economics, and socio-ecological models to create new planning tools for school architecture.

- **The Power of Evidence**

  A two-year longitudinal study led by researchers at the University of Nebraska and University of Virginia resulted in evidence supporting the active role school design plays in catalyzing social and organizational change as well as supporting psycho-social and behavioral outcomes. The project demonstrated measurable improvement in students' awareness of dietary knowledge and positive food choices. Teachers and staff created new school policies and programs in gardening, healthy play, and after-school nutrition programs and took charge of their own health with incentivized health contests, cross-fit programs, and daily walking routines using school grounds.

The Buckingham County Training School, which operated from 1924 to 1953 near the current school site, was the first high school in the county for African American students. Eventually, the Training School dissolved, and the Carter G. Woodson High School for African Americans opened on the current project site in 1954. The renovation capitalizes on a landscape once under utilized – newly incorporating the Virginia Piedmont landscape as a shared community and learning resource.

A Bridge that Opens the World for Children

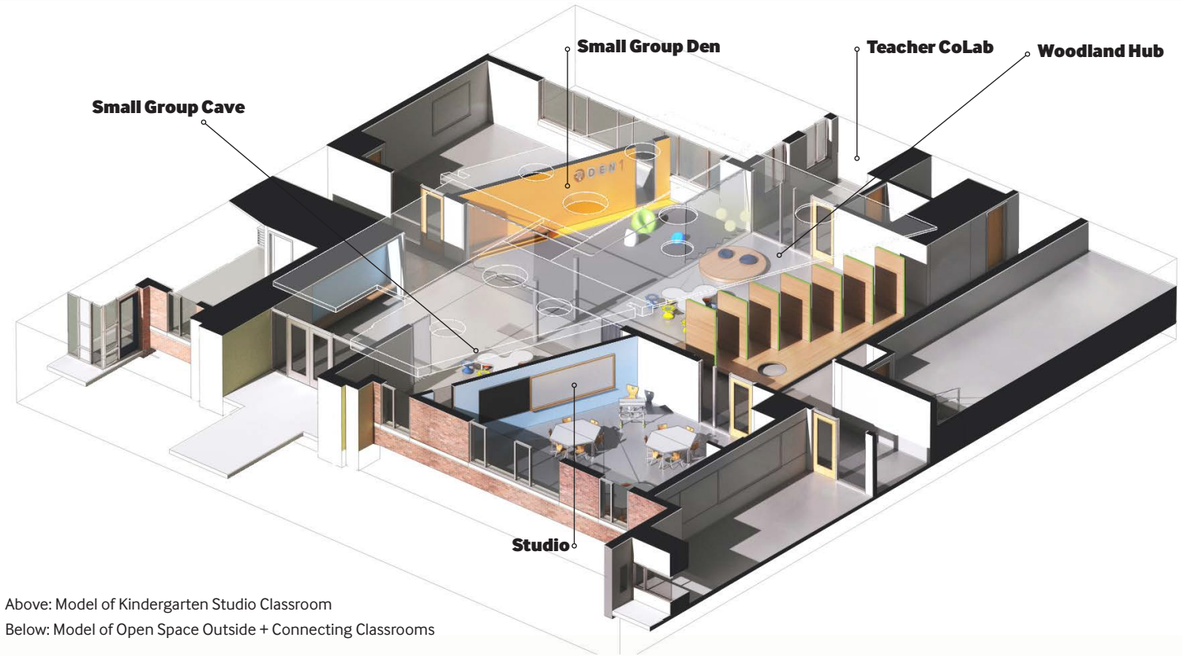
The strategic planning group, led by the District Superintendent, sought to develop a set of design principles to link project-based teaching practices with learning spaces for every member of the learning community. In addition to developing a set of educational specifications to revolutionize collaborative and interdisciplinary school practices, the team also sought to embed health-promoting design strategies that, by default, shift school culture toward better health and deeper learning.

The Healthy Eating and Physical Activity Design Guidelines were developed in collaboration with a research team of public health researchers, international childhood obesity scientists, a kinesiologist, and an anthropologist to develop 20 evidence-based domains of the school environment around 10 core healthy design principles. By prioritizing health and wellness, the learning experience is infused with inspiring spaces that spark curiosity, prompt discovery, and engage exploration. The team applied the Guidelines to the re-invention of space throughout two outmoded schools and bridged the two schools together with a glass- and light-filled addition. Shared collaborative spaces such as the "Cave" and "Den" feature benches, grab-n-go cushions, and curtains that can be flexibly arrayed to support learning and play. Large kinder-studios feature "resource bars" where creativity can flourish, and integrated niches allow children to choose where to get cozy when they want to concentrate or rest.

To match the District's vision for the future of learning and health, shared open spaces were designed to support different uses and adapt to technology and pedagogical changes over time. Public spaces were carefully carved out or preserved in existing architecture to support the following educational and physical environment goals:

- **Openness + Transparency** to make collaboration and creativity visible to the whole community.
- **Diversity + Biodiversity** to deepen learning and inquiry across subject areas indoors and outdoors.
- **Identity + Wayfinding** to demarcate space with emotionally appealing design elements.
- **Activity + Process** to bring many choices for activity-based work to each learning neighborhood.

'Home away from home' was a metaphor the team used to plan for activity-based learning spaces and innovation hubs. This theme translated to habitat-themed open labs identified by color and amenities, around flexible architectural centers like the Woodland Hub in the Primary School.

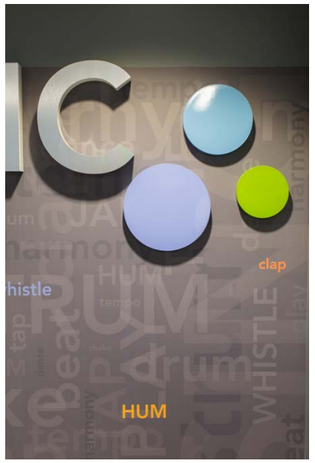


Above: Model of Kindergarten Studio Classroom
Below: Model of Open Space Outside + Connecting Classrooms

“In the case of schools, working across the educational, public health, and design sectors can produce not only beautiful but meaningful architecture as well as improve well-being and school performance.”

Dr. Terry T-K Huang
PhD, MPH, CPH
Researcher

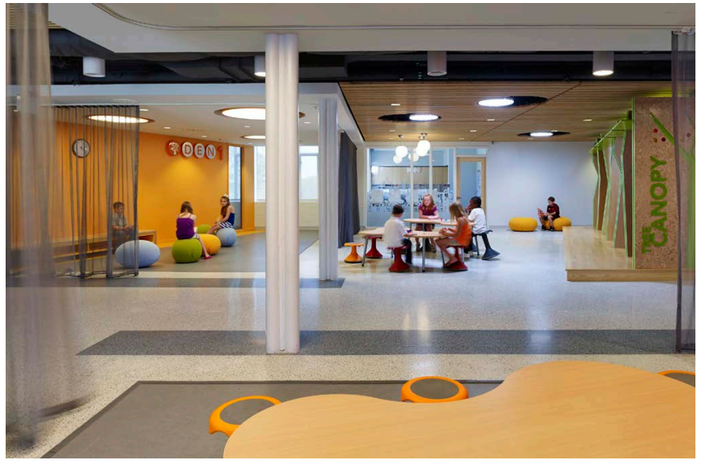
Sparking Wonder + Delight



By utilizing an interdisciplinary scientific approach, the team tapped into child-centric sensorial experiences to promote engaged learning through visual and tactile communication systems. Creating key learning space adjacencies along pathways provides children and adults with opportunities for planned and serendipitous discovery of their gifts and intelligences. As teaching methods change over time, the school's flexible open spaces are anchored by more permanent wayfinding elements that incorporate a combination of memorable materials and spatial touchpoints that help spark:

- **Inquiry** that begins with curiosity and is sustained by wonder.
- **Autonomy** that inspires confidence in navigating learning.
- **Communication** for meaningful connections between sensory and literary cues.
- **Agency** to be creative and expressive.

Child-Centric Spaces



The K-5 campus incorporates new and renovated spaces meant to inspire students and prompt inquiry and exploration. Educational opportunities spill outwards from classrooms into corridors, where various reading nooks and small-group study stations transform circulation pathways into child-centric "learning streets." These spaces are intimately scaled with soft seating and fun colors that help activate thought and play throughout the school day. Flexible furniture supports novel arrangements by teachers and accommodates student movement to help increase concentration and engagement. Educational spaces are available for everyone, at every scale and in any combination of grouping – in the form of reading nooks, learning streets, under-the-stair cubbies, and through various ergonomic desks, chairs, stools, tables, and grab-n-go cushions that can be customized to fit various pedagogical needs. Learning can take place on walls and doors (in the form of signage), on the floors (where footprints of local animals, featured in the signage, appear), and on nearly any surface of the school. Learning is made visible and celebrated, encouraging a lifelong pursuit that is positively reinforced by the following:

- **Wayfinding** that signals where to be and reinforces the meaning of space.
- **Movement** for healthy brain-body growth and development.
- **Choice** of where to move and how to learn comfortably with the support of furniture.

Design Guidelines for Healthy Eating + Learning

The process of creating the Buckingham school food environment to facilitate healthy eating resulted in the publication of the Healthy Eating Design Guidelines for School Architecture. This replicable (and publicly available) set of design guidelines draws on research in environmental health, environmental psychology, behavioral economics, and socio-ecological models. The interdisciplinary team developed 10 spatial domains organized around 5 core principles for healthy eating design based on the research and recommendations of several agencies. These principles include:

1. Provision of equipment and spaces that facilitate the incorporation of fresh and healthy food choices into the school and its community.
2. Provision of facilities that directly engage the school community in food production and preparation.
3. Application of evidence- and theory-based behavioral science principles to "nudge" the school community toward healthy eating behaviors and attitudes.
4. Use of building and landscape features to promote awareness of healthy and sustainable food practices.
5. Conception and articulation of school spaces as community assets to multiply the benefits of school-based healthy food initiatives.

The team focused on developing a tool that identifies zones that could potentially affect healthy eating in the school, provides exact recommendations for the physical design of each domain, and includes testable elements for the purposes of post-occupancy evaluation (which was undertaken with a 2-year longitudinal study). This planning process relied on 6 elements:

1. A unified vision and common goals.
2. Identification of multi-disciplinary skills and resources.
3. A focus on connecting conceptual and practical considerations.
4. Development of a common lexicon bridging research, design, and education.
5. An open and iterative culture for exchanging ideas (brainstorming, researching, and conceptual testing).
6. The integration of academic research into the operations of an architectural design practice.

Design Guidelines for Schools that Move

The Physical Activity Design Guidelines for School Architecture focus on building-scale features that help promote daily physical activity among school occupants. The team sought to combine healthy eating design strategies with active design features to better optimize the school architecture and interiors to shape health-oriented attitudes and behaviors. The team identified physical program areas such as circulation corridors, gathering spaces, classrooms, gyms and monumental stairs as catalysts for change in the sedentary culture at school.

Specific features like gyms with cushioned flooring, ergonomic furniture, standing desks, and mobile furniture were integrated throughout the school for better learning and health. Sensory attributes and aesthetic qualities were highlighted in the interior design to enhance the enthusiasm, curiosity, and spirit of adventure in the children and staff – design prompts which correlate with increased active and engaged use of building spaces.

To document these active design strategies, the team developed the Physical Activity Design Guidelines which feature specific design strategies in 10 school domains. Implementation of the guidelines has enabled students to adopt healthier active behaviors. Along with the Healthy Eating Design Guidelines, this innovative planning tool helps bridge the gap between research and environmental design practice, and may contribute to setting new industry and education standards in the future.

01

Community Engagement Process

Designing for Health: A Collaborative Process

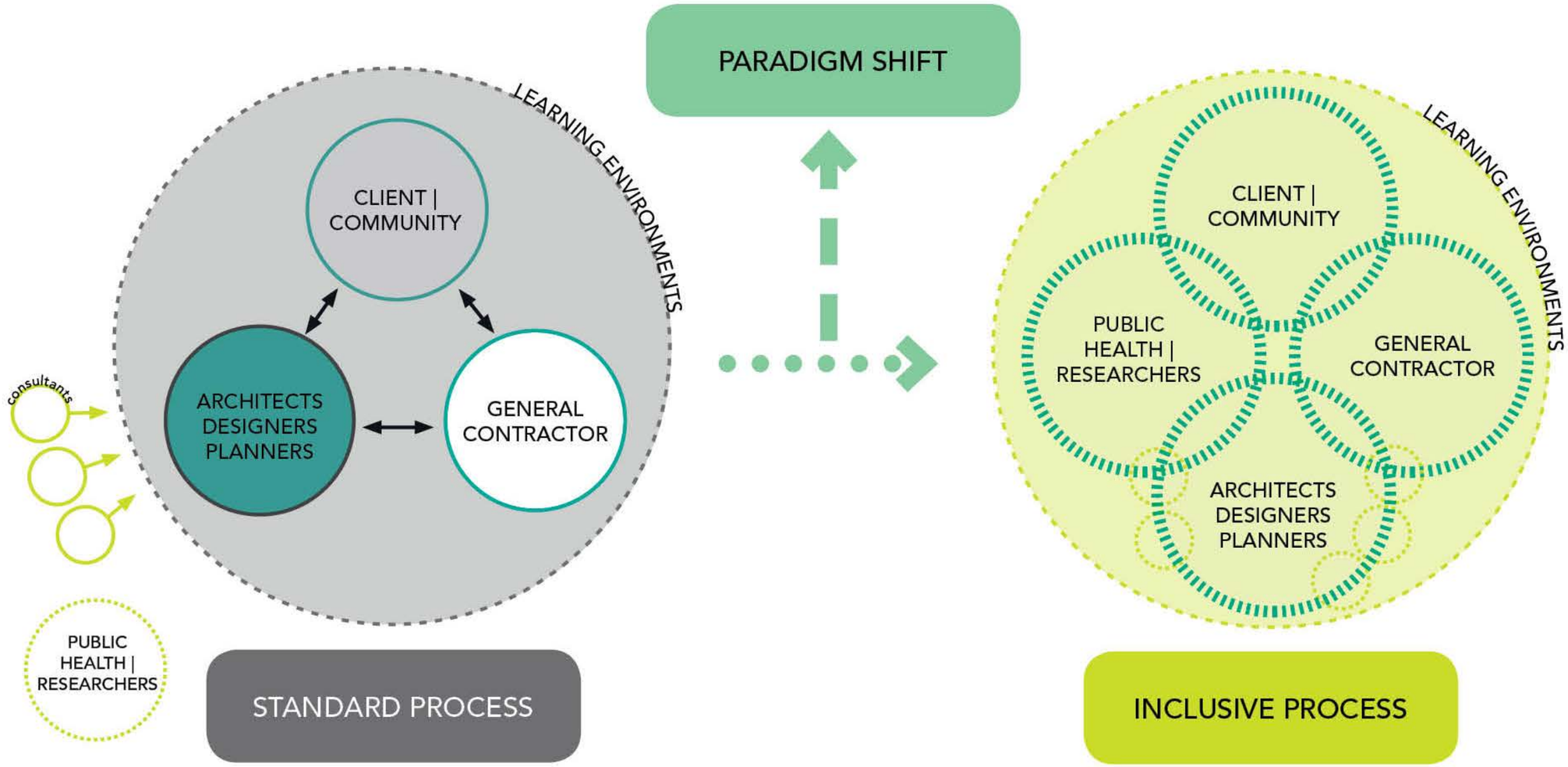
Garden Research + Learning

Supporting Local Economies

“I have come to believe that we can change lives through prevention and partnerships. Teachers are encouraging students to present ideas about movement, nutrition, and our own history.”

Penny Allen, Former Principal
Carter G. Woodson Education Complex
Primary School

Designing for Health: A Collaborative Process



Q: As a member of a committee that helped Michelle Obama shape her agenda on childhood obesity, you were trying to come up with solutions for the obesity epidemic that can be implemented within one generation. What are the priority areas?

A: Michelle Obama's Let's Move campaign embraces the following key areas: empowering families, starting health early in childhood, creating access to healthy foods, increasing physical activity, and improving the school environment for health. These are not necessarily mutually exclusive domains." **Dr. Terry Huang, MPH, CPH**

The Buckingham project is a prime example of improving the school environment for health, by increasing access to healthy foods and physical activity. "The community outreach and coordination work that support the construction of the new school will also go a long way in empowering families and mobilizing the community to create a larger scale change beyond the school itself" (Huang). A core contributor to the project, Dr. Huang along with the research team addressed the challenge of increasing healthy eating, physical activity, and movement through the built environment. Research and collaboration resulted in the publication of the Healthy Eating and Physical Eating Design Guidelines, for School Architecture which provide architects and designers, school planners, educators, and public health professionals with strategies to make K-12 school environments conducive to healthy eating and physical activity. They also engage scientists in transdisciplinary perspectives toward improved knowledge of the school environment's impact on students and communities.

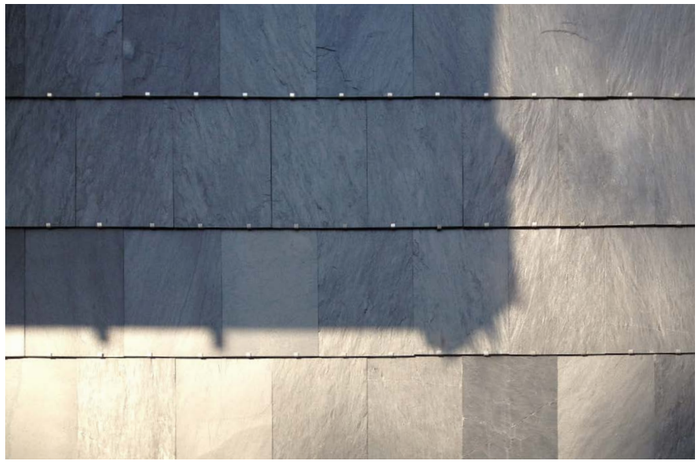
Q: What are some unique characteristics of a rural school in a small school district vs. an urban school in a large school district?

A: Transportation is an issue. There is also a scarcity of opportunities for students to be physically active. We have a youth league program with soccer, baseball, football and cheerleading, but this is not an option for many families who struggle with vehicle problems or don't have money for gas. Our younger generation of parents do not plant gardens and find less healthy food cheaper and more convenient.

Ms. Pennie Allen, Former Principal, Primary School

Identifying a cultural network for the rural school was a need the District worked to address in order to strengthen community ties to existing programs and to further goals for environmental education. Hosting and facilitating several engagement workshops, the team tapped into community and national partnerships to plan spaces for on-going activities with organizations such as Buckingham 4-H Youth Development, summer school garden research initiatives with the University of Nebraska, Peter Francisco Soil & Water Conservation District, and master gardeners throughout the region. A major milestone in the collaborative planning process, a Garden Workshop brought together a diverse group of experts from the fields of landscape architecture, public health, education, non-profit youth organizations, design, anthropology, and facilities operations to map out the future of learning in outdoor settings throughout the year. By discussing the opportunities and challenges of building, maintaining, and utilizing outdoor amenities for community use, the team was able to design native habitats, outdoor classrooms, and play terraces to empower the community with healthy choices and initiatives.

Sustainability + Local Economies



Sustainable material choices highlight local natural resources and prompt teachable moments. Local Buckingham slate – quarried 12 miles away and featured in 10 different uses inside and outside – appears prominently throughout the campus, reaffirming the community's connection to its natural context. A unique use of slate is found in the slate lined stormwater conveyance channel cutting through the entry plaza. The channel measures the size of storm events, allowing students to understand the occurrence and volume of water associated with each storm. All local materials and sustainable systems are further explained in educational signage.

To help students and community members think critically about future needs, the team hosted a sustainability charrette to develop a robust set of environmental site strategies including stormwater, energy, lighting, and habitat ecology management goals. Overarching goals to reduce heat island effect and heat gain while increasing natural ventilation and daylighting were met through the LEED framework, with the building achieving LEED Gold certification. Through both conservation and renewable methods, the Buckingham campus sets a community standard for healthy watershed eco-stewardship, as the county crosses three primary Virginia watersheds.

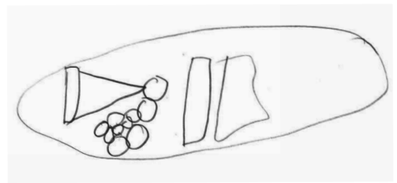
Garden Research + Learning

Designing the research model to assess best practices for garden curriculum involved identifying activity development (curricula vs. activities), standards of learning in math and science investigation, STEM teacher collaboration, and the use of online resources. After building the garden, the researchers, educators, and students created community rules, studied the life cycle of plants and the anatomy of edible plants, grew soil "babies" (e.g., seedlings), and made mini-pizzas and fruit salad with ingredients from the garden. Using quantitative and qualitative methods to analyze children's knowledge, beliefs, and attitudes about healthy eating, both pre- and post-testing demonstrated a strong increase in food and nutrition knowledge. In a series of student reflection drawings (depicted right) there was a remarkable change from pre-and post-assessment with children choosing vibrant colors, shapes, garden designs, and a variety of fruit and vegetable preferences after their short summer session immersed in the garden as a classroom.

A pilot study conducted by the University of Nebraska Medical Center's College of Public Health / Department of Health Promotion and Social and Behavioral Health outlined best practices for the integration of schoolyard curriculum into the Healthy Eating Design Guidelines. The education team allocated summer school months to teach students about gardening and food education in collaboration with researchers. The goal was to assess best practices pertaining to the integration of school gardens into core academic classes to promote synergistic health and academic outcomes with 4 key objectives:

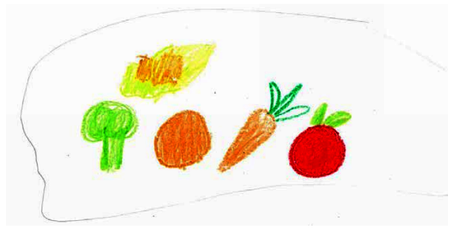
- **Perform Qualitative Review** of best practices for curriculum integration.
- **Identify Stakeholder** beliefs pertaining to barriers and strengths in the implementation of school gardens and garden based curriculum.
- **Determine Feasibility** of school garden curricula.
- **Collaborate on Strategies** for incorporating school gardening into the regular academic school year.

Draw a meal you would like to have for dinner



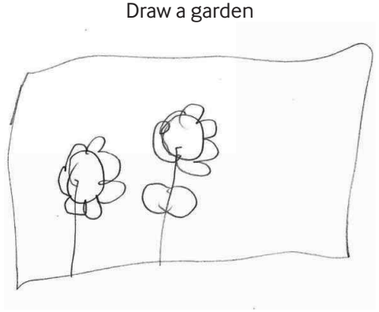
BEFORE

Draw a meal you would like to have for dinner



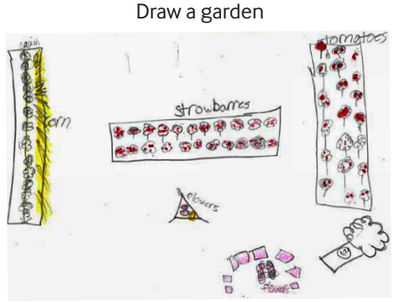
AFTER

Draw a garden



BEFORE

Draw a garden



AFTER

02

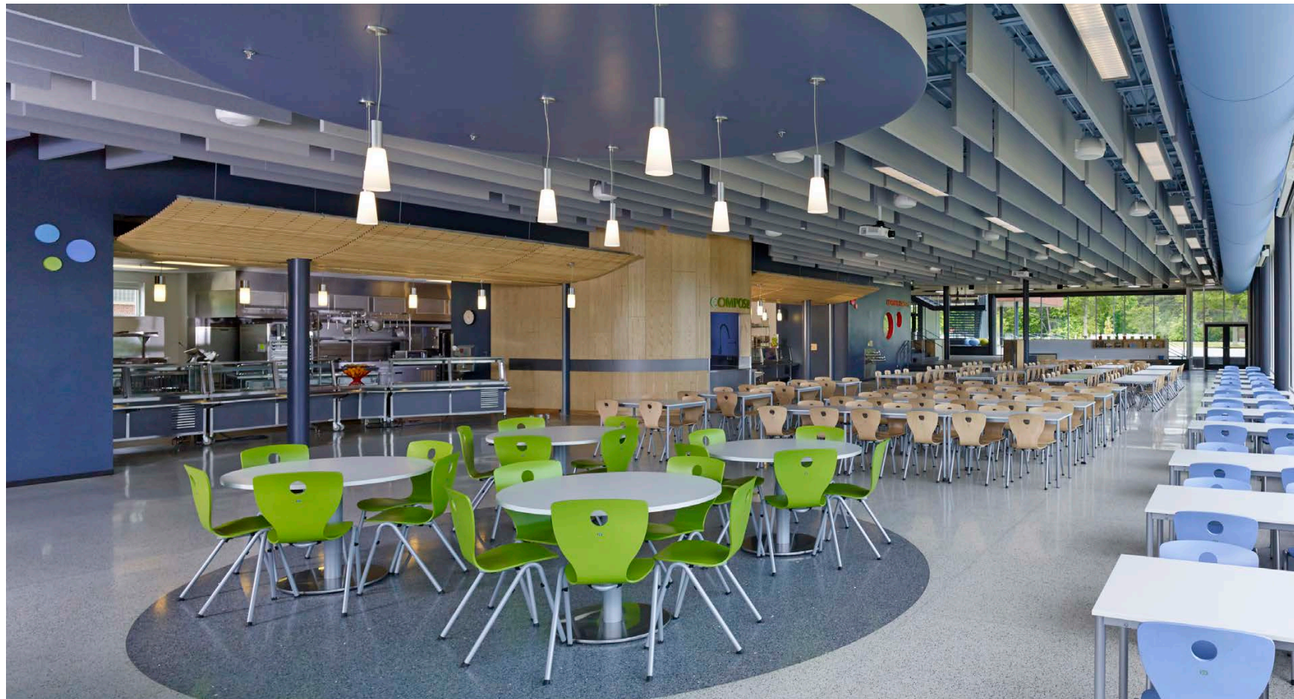
Educational Environment

21st Century Dining Experience

Designing for Foodsmart Kids™

21st Century Dining Experience

Co-created alongside researchers, the design team optimized environmental health research factors such as air quality, acoustics, climate, crowding, ergonomics, and lighting because of their direct effects on occupant well-being. As these environmental factors can influence activity patterns, stress, appetite, and food choices, the team also applied environmental psychology theory to the design of the Dining Commons – recognizing the transactional relationship between this special built environment and social life as influencers of learning. The redesigned school complex incorporates a range of food and dining components, including space for school gardens and outdoor eating. The layout of the open commercial kitchen, teaching kitchen, food lab, serving area, and dining area incorporates several overlapping strategies that promote healthy food education. The open commercial and teaching kitchens are co-located for dual community use, allowing shared experience and fresh kitchen garden produce to be utilized for school lunch or integrated in the curriculum.



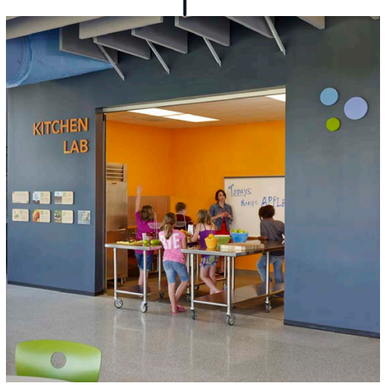
Kitchen Garden

Outdoor Classroom + Dining Terrace

Community Meeting Room

The Great Lawn

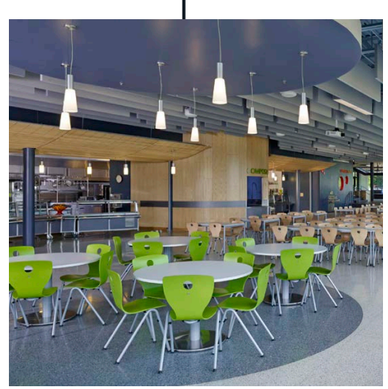
Outdoor Classroom + Dining Terrace



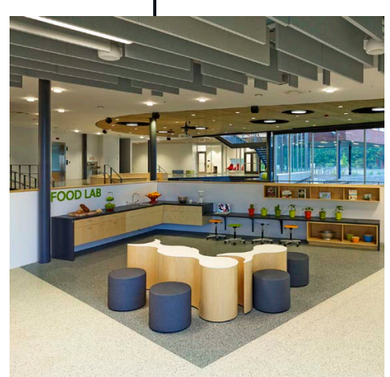
Kitchen Lab

Table-to-Garden Dining

Demonstration Kitchen

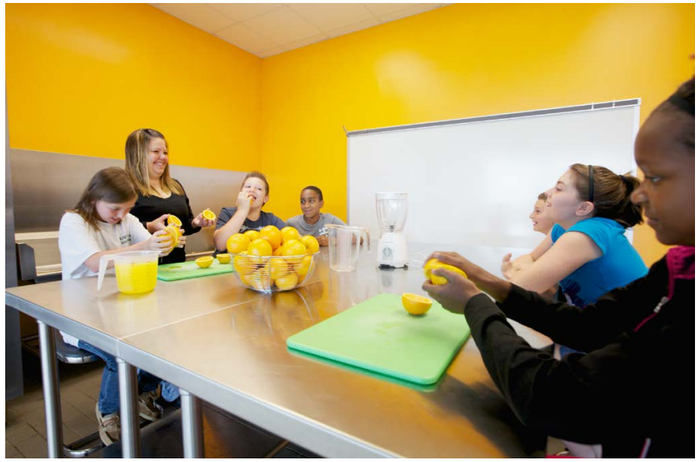


Dining Commons + Open Servery



Food Lab

Designing for Foodsmart Kids™



The Healthy Eating Design Guidelines for School Architecture provides practitioners in architecture, education, and public health with a practical set of spatially organized and theory-based strategies for making school environments more conducive to learning about and practicing healthy eating. By optimizing physical resources and learning spaces, this measurable tool improves the ability of schools to adopt a healthy nutrition curriculum and promote healthy eating. The planning guidelines emphasize programmatic connectivity between indoor / outdoor eating and food preparation spaces to promote flexibility in using spaces for various functions. The social science behind this new paradigm in healthy eating environments that encourage healthy decisions follows four key planning themes:

- **Choice Architecture** to feature healthy choice as a tool to empower kids.
- **Behavioral Economics** to make the healthy choice the easy choice for kids.
- **Healthy Foodscape** to encourage nutrition & whole food education.
- **Active Interiors** to create joyful, beautiful spaces dedicated to mealtime.

03

Physical Environment

Activating Bodies + Minds

Enriching Literacy + Inquiry

Wayfinding as Placemaking

WELCOME

TO THE ACTIVE LANDSCAPE AT

BUCKINGHAM COUNTY
PRIMARY & ELEMENTARY SCHOOLS
CARTER G. WOODSON EDUCATION COMPLEX

BE ACTIVE!
PHYSICAL ACTIVITY ZONES

1. GYMNASIUM + FITNESS ROOMS
2. K-2 PLAY TERRACE + WATER STATION
3. 3-5 PLAY TERRACE + WATER STATION
4. TOT LOT NATURAL PLAY AREA
5. ECO-WALKS / JOGGING PATHS
6. RECREATIONAL SPORT FIELDS
7. OPEN + FREE PLAY
8. K-2 EXERCISE LOOP (4 LAPS = 1/4 MILE)
9. 3-5 EXERCISE LOOP (5 LAPS = 1/2 MILE)
10. WEEKEND + OFF PEAK BICYCLE LOOPS

EAT HEALTHY!
FOODSMART KIDS ZONES

1. DINING COMMONS + FOOD LAB
2. TEACHING KITCHEN LAB
3. KITCHEN GARDENS
4. EDIBLE COMMUNITY GARDENS
5. GREAT LAWN + GRAB-N-GO BERRY PATCH
6. FRUIT TREE ALLÉE
7. NUT TREE CIRCLE
8. COMPOST DEMONSTRATION GARDEN
9. PICNIC KNOLL
10. OUTDOOR DINING + CLASSROOM

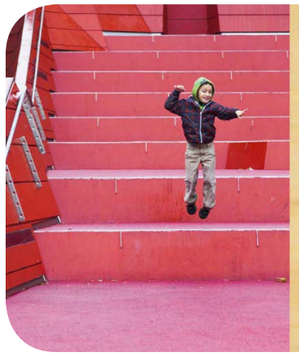
EXPLORE NATURE!
ECO-ACTIVITY ZONES

1. NATIVE MEADOW GRASSES
2. FROG BOG OBSERVATION DECK
3. K-2 SCIENCE GARDEN
4. ARTS TERRACE + GARDEN COURTYARD
5. SONATA TERRACE + GARDEN COURTYARD
6. POLLINATOR BEE + BUG GARDEN
7. WOODLAND HUB

FIND THE WATER!
HYDROLOGICAL SYSTEMS

1. BIOSWALES + CLEANSING BIOTOPES
2. FROG BOG WETLAND
3. SLATE CHANNEL + WATERFALL SCUPPER
4. RIVER ROCK STREAM
5. RAINWATER CISTERN (1,400 GALLONS)
6. PERVIOUS PARKING COURT

Activating Bodies + Minds



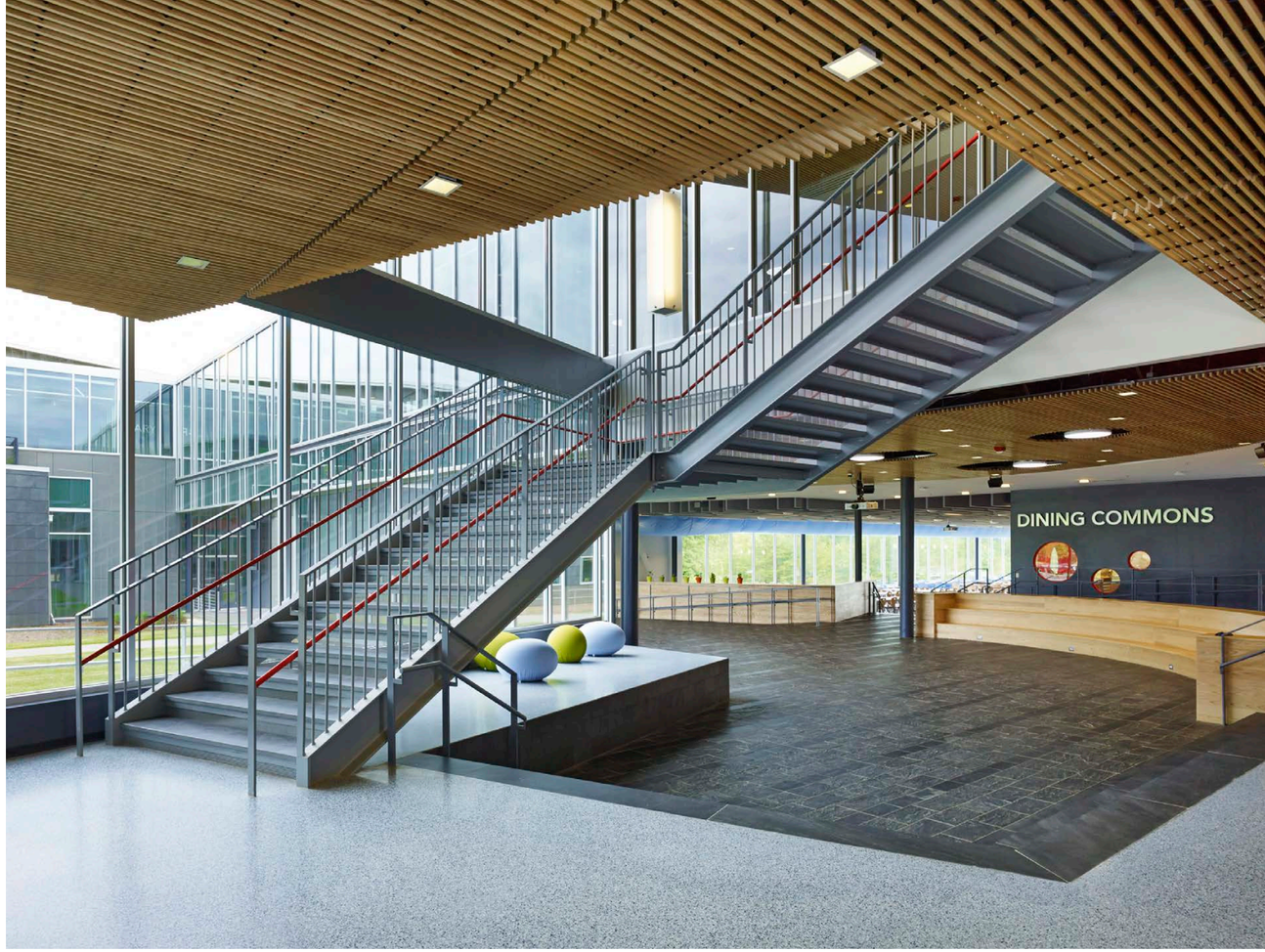
HOP ON UP!

Get out of your chairs!
Jump up! Jump down!
And hop on up the stairs!

Using the stairs burns twice as many calories as walking!

The design of the school supports the District's goal to integrate low-to-moderate intensity movement throughout the school day in addition to high intensity physical activity through sports and recess. Accelerometry data has shown significant impact on reduced sedentariness and increased light physical activity. There was a general shift from MVPA (moderate to vigorous physical activity) to LPA (light physical activity), which is not unexpected given the design was geared more towards LPA, but this does call attention to the need to think about future design for both LPA and MVPA separately. Given the limitations of a natural experiment, the design of the school campus provided a first set of evidence prompting consideration of how comprehensive school design can indeed impact physical activity.

Making the case for vibrant, high quality interiors: every setting contributes to community health by providing materials with healthy ingredients and a variety of textures; furniture that is designed for the ergonomics and kinetics of kids; and the use of color to create a positive, safe sense of spatial ownership. Spaces were designed to meet the needs of all children, no matter what their physical, cognitive, behavioral, and social abilities. Interactive learning spaces with high degrees of flexibility and movement are woven together with quieter spaces for reflection. A warm-to-cool color system was devised to bring deeper and more meaningful relationships to the spaces children inhabit while enhancing their sense of wellbeing.



After a design-thinking planning session, the stakeholder group prioritized investing in health for each member of the learning community at the scale of the furniture landscape. Postural choice was embedded in each space in order to support flexibility, agility, and adaptability. Being able to lie down, stand, sit dynamically, wiggle, and lounge are some of the spontaneous and necessary low-to-moderate movements that are encouraged for both physical and cognitive development throughout the school day. The connection between natural, healthy materials and the systematic use of color reinforces the playful atmosphere that is so appealing to children.

Enriching Literacy + Inquiry

The entire K-5 school campus is a teaching tool designed to prompt healthy decisions: it encourages healthy eating behavior, promotes activity, and inspires creative exploration of students' interior and exterior worlds. In order to enrich literacy and inquiry, the planning and design team envisioned an open library environment saturated with design features like reading nooks, an outdoor library terrace, large-scale graphic quotes, and kid-centric reading prompts to enrich daily exposure to language.

Building vocabulary and strengthening reading comprehension in fun, colorful, and comfortable spaces throughout the school spoke to the need to bring social delight to everyday exploration through physical books, digital tools, and nature. While the team acknowledged the data, rubrics, and standards that continue to measure the efficacy of teaching, equal value was placed on the socio-emotional – and related academic – development of Buckingham students.

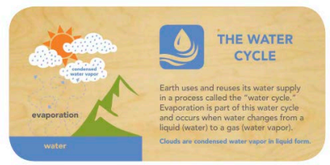
Q: What role does the built environment play in kids' lives?

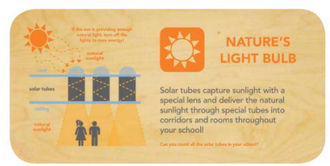
A: We know the environment shapes attitudes and behaviors. We know that community values are reinforced by the quality and care taken in our surroundings and we know that children create personal meaning from these settings. With that, we also need to consider the variety of ways children learn and express their multiple intelligences by allowing for teachers to present lessons in a wide variety of creative ways to 'light up' cognitive curiosity.

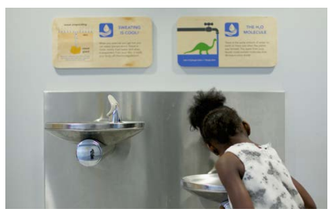
Design Team Member

Designing for all the senses means designing for the broad range of human potential in children. The team prioritized the realm of the senses through architecture, interiors, and environmental graphics. Broadly extending "health" to learning created fresh insight into the necessity to design for the inherent intelligence, creative capacity, and natural wonder that young learners bring to their learning opportunities. Focusing on a planning process that "create[d] an environment that promotes the health and mental well-being of our students and results in better engagement and learning opportunities" was a top goal of Pennie Allen, former Principal of the Primary School.

The school's graphics render the branding of health explicit by strategically scattering inquiry-based facts and health-related lessons about human and environmental systems throughout the school campus. Stairways, water fountains, healthy food options, and sustainable building materials, co-located with related facts and lessons, become design interventions prompting discussion and reflection about activity and movement, hydration, healthy eating choices, and energy conservation, among other topics.







Wayfinding as Placemaking

The campus features an integrated interiors package – including a distinct color palette, logo brand identity, environmental graphics, and educational signage – that together create a cohesive teaching and learning environment that supports the whole child.

The wayfinding techniques and related classroom /grade-level signage integrated in the campus bring the natural environment to life for students. Moving west to east, from the Primary to the Elementary School, the campus' wayfinding follows the progression of Virginia's geography (mountains to ocean) and assigns a habitat, or biome, to each grade. Classroom signage features a grade-level color, biome icon, and related native species found in that habitat of Virginia. While the Primary School is associated with warm colors and terrestrial species, the Elementary School features cool colors and aquatic species. Such colors and imagery feature prominently in the campus to encourage grade-level identity and introduce students to the natural world around them.

Primary - Virginia Land Eco-Regions

Elementary - Virginia Water Eco-Regions

04

Results of Process + Project Data

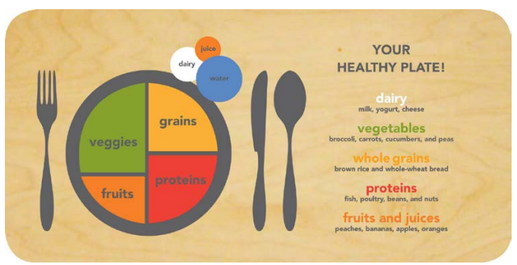
Measuring Success

Designing for health has transformed a rural community like Buckingham County and helped shape the next generation of healthy kids. The re-design of the school campus sought to enhance and influence the physical and mental well-being of the County's educators, staff, and youngest learners through the planning of innovative learning environments at a variety of scales for hands-on, real world teaching and learning.

With such limited global research exploring children's conceptualization of food and healthy eating, one component of the project research was to identify patterns and themes regarding children's perceptions of food and healthy eating as a result of the new school design. 7 focus groups were held with a cohort of children in grades 3-7, both pre- and post-design and occupancy, as a component of the two-year longitudinal research. The evidence demonstrated an improvement in the awareness of dietary knowledge and positive gains in food choice and dietary intentions. The research also concluded that nutrition education should expand strategies beyond promotion of health benefits to include taste and cultural familiarity. Drivers of food likability were expressed through taste, texture, and visual appeal in addition to their associations with positive home and family experiences.

"Our school tells you cool facts like about the mountains and water and food and health."

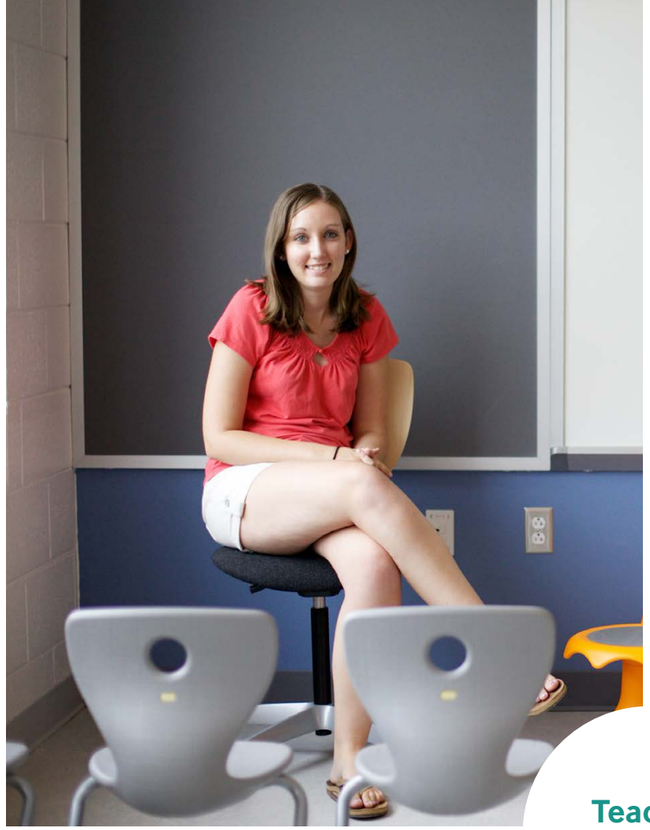
3RD Grade Student



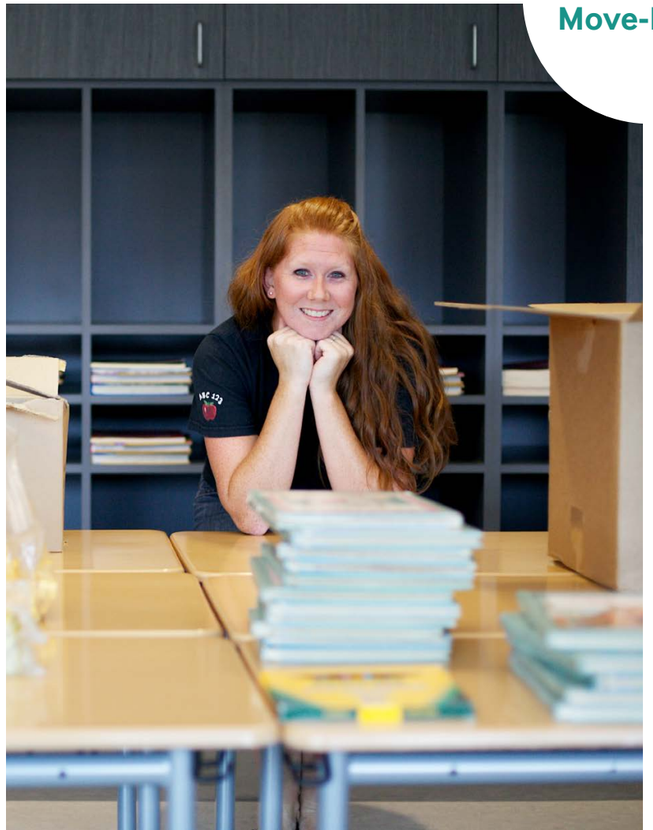
Measuring Success

The new Buckingham Primary and Elementary Schools needed to serve a diverse demographic in a rural context, including early and young learners from around Buckingham County. Starting with Kindergarten and remaining on the new campus through Fifth Grade, the children now have a school that is designed to benefit their diverse range of needs for health, learning, and responsible citizenship. And the community now has a vibrant architectural focal point and gateway for social events. But it has been acknowledged that teachers are in fact the drivers of change and it is their day-to-day creative contributions that make the school a rich, warm, safe, and resourceful 'home away from home' for children.

The project research provided evidence that the school's design was a catalyst for social and organizational changes, supported shifts in the awareness and influence of space, and influenced positive psycho-social and behavior outcomes. Teachers and staff have created new school policies and programs in gardening, healthy play, and after-school nutrition programs. They have also started to incorporate healthy eating messages into daily announcements. Inspired to take charge of their own health, teachers and staff have started incentivized contests, cross-fit programs, and daily walking routines using school grounds and movement spaces.



Teacher Move-In Day



Conclusion + Project Data

The project has become a national reflection of the future of learning and of practice. The design, research, and evidence contributed to multiple disciplines could not have been made without a deeply engaged and collaborative District leadership group who paved the way for an interdisciplinary team to design and launch a two-year longitudinal study. Recognizing the impact of the project, the American Institute of Architects (AIA) has promoted the project as a Case Study example of a multidisciplinary approach to move schools forward toward a culture of health. The project also aligns with a national objective to build a stronger intersection for public health and built environment experts to address multi-scale solutions for healthier communities across the country. The project overwhelmingly aligns both District educational goals and the AIA's criteria for design for the public realm, including: environmental quality, natural systems, physical activity, safety, sensory environments, and social connectedness.

Project Data

Site Area: **40 acres**

Site Development Area: **14 acres**

Total Gross Building Area: **134,000 GSF**

Construction Cost: **$18,570,000**

Furnishing Cost [FF&E]: **$1,200,000**

Technology Cost: **$1,000,000**

Environmental Graphics Cost: **$125,000**

Construction Dates: **Fall 2010-2012**

Opening Date: **Fall 2012**

Sustainability Rating: **LEED Gold**

National EUI Baseline: **70**

Predicted EUI Model: **45.3**

Actual EUI: **47.5**

Published Research (Excerpted)

- “Healthy Eating Design Guidelines for School Architecture.” CDC: Preventing Chronic Disease. 2013.
- “Physical Activity Design Guidelines for School Architecture.” PlosOne. 2015.
- “Influence of School Architecture and Design on Healthy Eating: A Review of Evidence.” American Journal of Public Health. 2015.
- “Moving Schools Forward: A Design Recipe for Health: Buckingham County Primary & Secondary School.” AIA. 2015.
- "Children's Discourse of Liked, Healthy, and Unhealthy Foods." Journal of the Academy of Nutrition + Dietetics. 2016.
- "Comparison of School Furniture on Physical Activity and Learning in Children." The Journal of Primary Prevention. 2016.
- “Visual Research on Student Perceptions of the School Health Environment.” Children, Youth and Environments. 2016.
- "A School Building that Teaches Health: Buckingham County Primary and Elementary Schools." SmartMarket Report. 2016.