

EXECUTIVE SUMMARY

RESEARCH, DESIGN, & ASSESSMENT

When Richland School District Two (RSD2) decided to build a new Bethel-Hanberry Elementary School (BHES), they envisioned a facility that was more than an updated version of the old school.

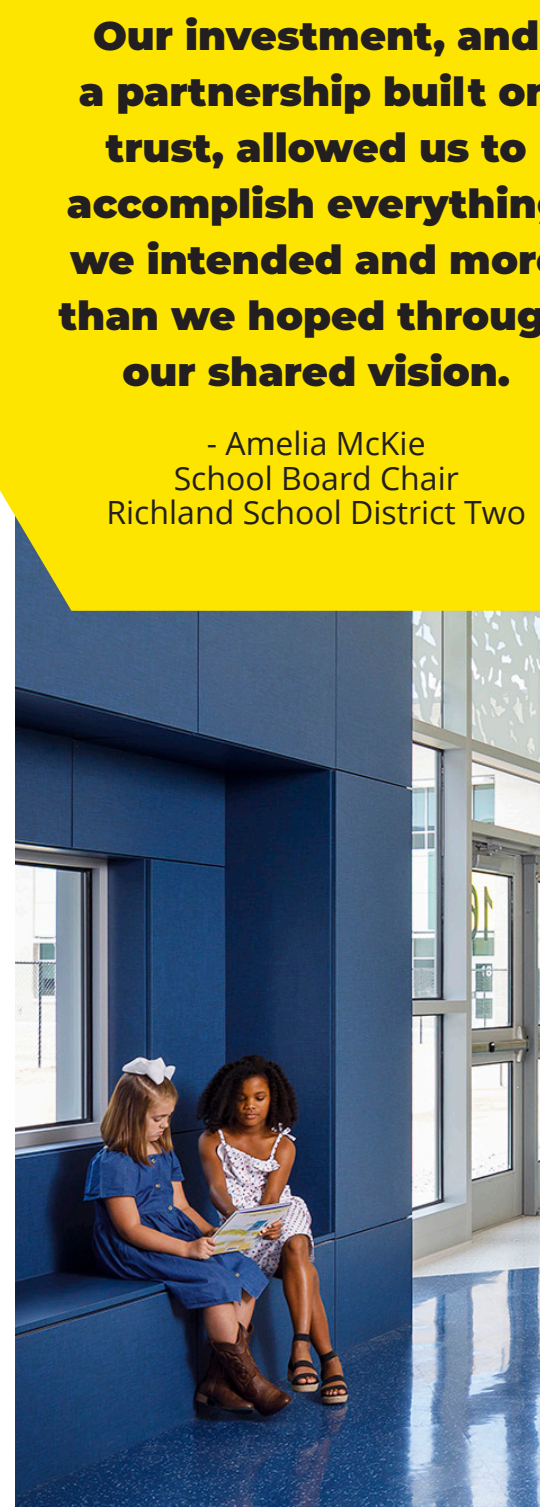
The new Bethel-Hanberry would be a place that promoted academic performance and student well-being, and a school that addressed equity and safety through research and innovation. Understanding that facilities can play a significant role in student success, RSD2 set out to create a school that would serve as a benchmark for exceptional teaching and learning environments that facilitate modern pedagogy, prioritize engagement, and nurture all students, and one that would honor the rich history of Blythewood, South Carolina's first African American school.

Paramount to the success of launching the new school was drawing on the voices of this tight-knit community and ensuring all felt welcomed, included, and valued. The design was shaped through a collaborative process of listening and learning sessions with stakeholders including the school's Athletic Alumni Association and Blythewood's Historical Society that provided insight into the influence of Ms. Annie Hanberry who passionately spearheaded the advancement of education for Black students and the school's accreditation.

Nine focus goals were developed as a result of the visioning exercises and further distilled into three design touchstones: **biophilic design, student-centered design, and student well-being.** Stakeholders were drawn to environments that were connected to nature, open, flexible, and showcased bright colors.

Steeped in the knowledge of K12 learning space research and the benefits of biophilic design, an architectural expression of the new facility took shape as a composition of contemporary materials, nature-based colors and graphic representations of the school's history and culture. Open, collaborative spaces and expanses of glass complement security strategies integrated into the building.

As a replacement school, the owner/architect team took the opportunity to examine the effectiveness of the design after their first year in the new school in comparison to that of the previous year in the old school. With an abundance of information through surveys, interviews, and student performance data, the assessment shows the enthusiasm of the school's users and evidence of facility's positive contributions to the teaching and learning environment and to key educational outcomes.



Our investment, and a partnership built on trust, allowed us to accomplish everything we intended and more than we hoped through our shared vision.

- Amelia McKie
School Board Chair
Richland School District Two

SCOPE & BUDGET

Scope:
New Construction & Facility Replacement

Site:
27.21 Acres

Area:
137,322 sf

Capacity:
750 students
K4 – 5th Grade

Budget:
\$43.2M

Cost:
\$38.1M

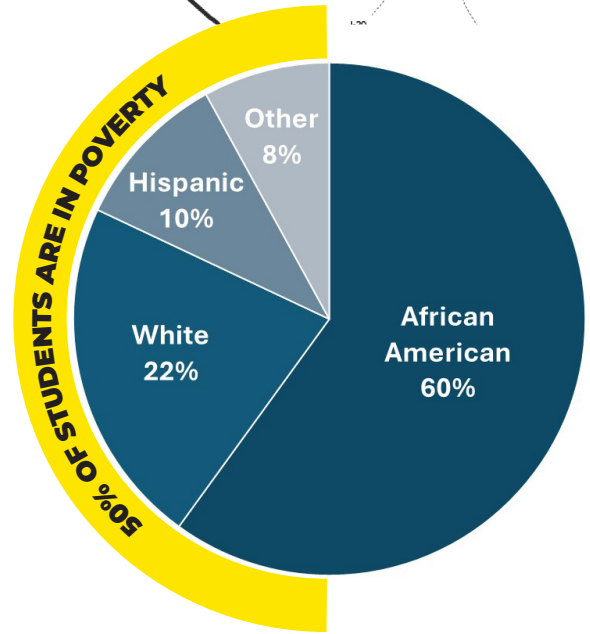
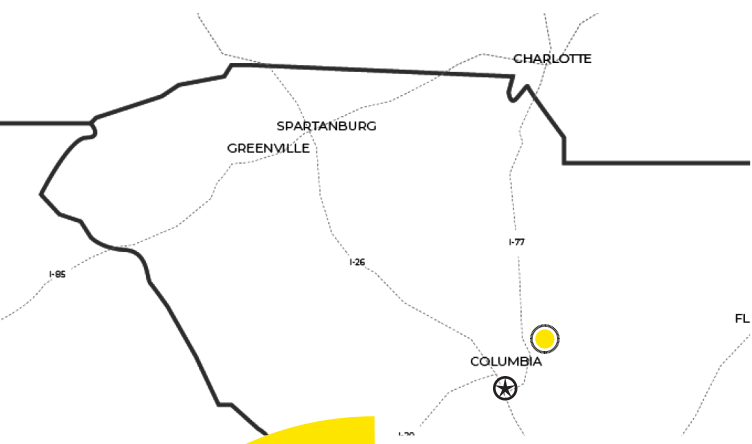
Owner:
Richland School District Two

Delivery Method:
Construction Manager at Risk

LOCATION & DEMOGRAPHICS

Situated 20 minutes outside of Columbia, SC, Blythewood was once a rural area whose population was historically African-American.

Located in the heart of the community along the interstate connecting Charlotte to Columbia, the population of Blythewood has grown significantly in recent years. As part of a response to this population increase, RSD2 successfully passed \$382M bond referendum and recognized the need to replace BHES with a new facility to elevate teaching and learning for the future, while honoring the school's legacy.



HISTORY

BHES is rooted, from its earliest beginnings, in church-based schools after the abolition of slavery. The school was named after Bethel School, the original circa 1920s one-room schoolhouse, and Annie Hanberry, who passionately spearheaded the advancement of education for Black students and championed the school's accreditation which was achieved in 1956. Through a series of consolidations, the school served as a high school and middle school before becoming Bethel-Hanberry Elementary school in 1991.



1969
Today we are caught up in an extraordinary period of human history, characterized by massive, rapid, and unceasing social change, affecting all the political, social, economic, and religious institutions of the world. In the midst of these changes there is the conflict between the new and old orders of society and the radical questioning of all values. In every part of the world there is the search for a basis of meaning on which all persons may live with integrity, freedom, and purpose.

COMMUNITY

District Administration:
 Provided overall strategic vision and direction for the new elementary school. Developed and implemented District Facility Standards. Assisted in all processes and stages of the design and construction of the new facility.

School Administration:
 Worked with the design team to determine programming requirements and spatial organization. Aided in research assessment by administering and responding to surveys, questionnaires, and interviews.

School Board:
 Guided the new construction team on appropriate usage of bond referendum funds. Reviewed design progress for overall conformance with community's and district's vision at project milestones.

Mayor: As a former student, the mayor was heavily invested in the design of the building, reviewing the design and providing valuable input at key milestones.

Teachers:
 Contributed to visioning sessions by providing feedback on design concepts such as exterior aesthetics, flexibility in learning environments, and biophilic design principles. Collaborated in the design process to review plans and details on a departmental basis to determine space functionality, millwork details and layout, technology, and accessories locations. Participated in the assessment research by administering and responding to surveys, questionnaires, and interviews.

Students (Former + Current):
 Expressed opinions and challenges to design aesthetics and physical learning environment desired outcomes. Contributed to the assessment research by responding to surveys, questionnaires, and interviews.

Parents:
 Attended visioning sessions to convey design input: including concerns about safety and carpool and busing. Provided comment on overall aesthetic visions. Participated in post-occupancy surveys and interviews to aid in the research assessment.

Athletic Alumni Association:
 Provided historical anecdotes and stories relating to the school's past to provide the design team with a clear understanding of the significance of this facility throughout the community's history.

Blythewood Historical Society:
 Supplied the design team with historical facts, figures, and images to incorporate into the physical environment that give a clear relation and representation of the school's history.

Community Members (Town of Blythewood, Richland County Council, Richland County Recreation Commission, government leaders and groups.) Voted to approve Richland School District Two's 2018 Bond Referendum which made the project possible. Attended visioning sessions to provide input on physical expression of the new elementary school.



CHALLENGES

- Design and construct the new facility amidst an unprecedented global pandemic when social contact was difficult, material prices skyrocketed, and labor shortages were occurring worldwide.
- Preserve the history of a tight-knit community while welcoming a growing population of new students.
- Replacement of a beloved, outdated school that had been modified to accommodate different populations throughout its history
- Preserve historical gym on site, provide parking and accessibility.
- Educate and encourage stakeholders to accept a two-story classroom wing model.
- Meet or exceed the guiding principles and core values of Richland School District Two.
- Construct new facility while maintaining operations of existing school.

ASSETS

- Innovative vision and championing design of 21st century learning environments.
- Site acreage and use supported the construction and management of the new school building while maintaining existing school operations with minimal disturbance.
- The community and stakeholders were committed to design for student-centered learning.
- The school district was open to utilizing the building to support the community.

← →

1936	1939	1949	1956	1967	1970	1980	1991
Mrs. Annie Hanberry begins as one of two teachers at Bethel School	New site with 4-Room School went up to Grade 8	Stone building erected to become Bethel High School; first class to graduate 12th grade	High School becomes fully accredited	Rename to Annie E. Hanberry High School	Hanberry Junior High School	Bethel-Hanberry Middle School	Bethel-Hanberry Elementary School Established

VISIONING WITH COMMUNITY

The BHES collaborative and inclusive design process fostered active participation by the entire community. It began by envisioning goals for the new school in numerous community meetings and direct conversations including district and school leaders, Board members, school staff, former and current students, parents, the Athletic Alumni Association, the Blythwood Historical Society, government leaders, and more. The broad community of stakeholders was encouraged to generate ideas and envision spaces to support the goals, and provide feedback to design ideas during multiple stakeholder meetings. This process resulted in nine focus goals.



VALUE OF PROCESS

The design team and community representatives reviewed various design solutions, including materials and aesthetics, safety measures, diverse indoor and outdoor learning spaces, sustainable features, ways to honor school cultures and histories, teaching tools, and strategies to foster community engagement. These conversations shaped the design.

While delighted to have a new school, honoring the past was very important to the community. Through this inclusive design process, the most vocal group was the Hanberry Athletic Hall of Fame. The mostly older gentlemen told fond stories of the school and of games played and won in the gymnasium. That facility held a special place in their hearts so the school district agreed to save the gymnasium, and donate it to the town. All looked forward to honoring Ms. Hanberry in the new design as well. This process customized the school to the community and its needs, and gained community support and buy-in.



ONGOING ENGAGEMENT

Beyond formal presentations, the design team engaged in small-group workshops with stakeholder representatives from each department within the school to discuss project goals, review construction drawings (plans, elevations, millwork details, and finishes), gather feedback, and make decisions that tailored the design to facilitate a student-centered learning environment and improve the experience of using the facility. The teachers demonstrated their passion for their subjects and their children and made outstanding suggestions as to how the design could

enhance their teaching. Representatives from all aspects of school use were consulted about design matters including arts, special services, technology, media, administration, counseling, classroom teachers, physical education, and health. This approach further enhanced the sense of customization and ownership of the building.

In the midst of the global pandemic, the design team was able to utilize technology to maintain close coordination and collaboration between consultants, designers and the stakeholders. Moreover, the team was able to successfully deliver the project, on-time and under budget, despite the rapid economic changes and labor shortages.

60+

stakeholders

"...best example of full community engagement I have ever experienced."

- School Board Member

- 1 **STUDENT-CENTERED LEARNING** Teachers have flexible facilities to tailor the learning space to each student's needs, preferences, and learning style; students are given autonomy and agency; hands-on learning; independent and collaborative inquiry.
- 2 **CONNECTIONS WITH NATURE** Natural environments are included and simulated inside the school; natural light; views of nature; outdoor learning areas.
- 3 **WELL-BEING** Promote mental and emotional well-being; focus on stress and anxiety reduction; provide spaces for refuge and respite.
- 4 **SAFETY** Physical and emotional safety; everyone is and feels secure; everyone feels connected.
- 5 **EQUITY** Each student feels valued, supported, and empowered to succeed; support the diversity of students with a variety of teaching strategies; a variety of learning spaces; diversity is embraced.
- 6 **SENSE OF BELONGING** A welcoming entrance; feeling comfortable in the building; feeling connected to the school and larger community.
- 7 **DESIRE FOR LEARNING** Facilities are inspiring, sparking curiosity and imagination; engaging learning experiences; students are given opportunities to guide their own intellectual exploration; school fosters pride; students want to come to school.
- 8 **BEAUTIFUL AND COST EFFECTIVE** Beautiful design, integrated into the community; ease of maintenance; durable materials.
- 9 Honor the historic **BELOVED OLD GYMNASIUM** gymnasium as a community gathering space; surround the gymnasium with a park.

PHYSICAL ENVIRONMENT

The facility is a modern building characterized by transparency for learning on display, colored glass and metal panels, bright colors at points of egress, a tall glass entry and a colored glass corner turret at the library, heralding the significance as a beacon of learning.

Materials, colors, and finishes that complete the exterior palette relate to nature and are derived from the surrounding area. The exterior material palette utilizes brick, block, vibrant metal panels and glass to form a contemporary aesthetic. The buff and white colored brick and block relate to the sandy soils of the area surrounding area. Charcoal brick is used to provide relief in the mass of the building, thus likening the scale of the building to the surrounding structures.



“...it will be a beacon and center piece for the town for many years to come.

The thoughtfulness of natural light, colors in the school, the connection to the environment, and internal and external safety features will provide a healthy and safe learning environment.”

- Will Anderson, Chief Operations Officer
Richland School District Two

NINE FOCUS GOALS DISTILLED INTO THREE DESIGN TOUCHSTONES

1. Biophilic Design

The design of Bethel-Hanberry Elementary School was predicated on research done by the selected architecture firm, Salk Institute, Terrapin Bright Green and Morgan State University. The findings of that research, *The Impact of Biophilic Learning Spaces on Student Success*, indicated:

- Biometric measurements indicated students in the biophilic classroom were significantly less stressed over a 5 month period when compared to a control classroom.
- The average test score gain between September and March was 3 times better in the biophilic classroom when compared to the same class last year (without the enhancements).
- Surveys indicated students were more positive about learning in the biophilic classroom.
- Student and teacher Interviews indicated learners were “more relaxed”, “calmer”, “better able to concentrate” and “easier to focus” in the biophilic room when compared to their other classrooms.

Through implementation of biophilic design at BHES, the team was able to measure their impact which is further expounded upon in Section 6.

2. Student-Centered Design

3. Student Well-Being



THE IMPACT OF BIOPHILIC LEARNING SPACES ON STUDENT SUCCESS

Jim Determan, FAIA
Craig Gauden Davis

Dr. Mary Anne Akers
Morgan State University

Tom Albright, Ph.D.
Salk Institute

Bill Browning, Hon. AIA
Terrapin Bright Green

Catherine Martin-Dunlop, Ph.D.
Morgan State University

Paul Archibald, Ph.D.
Morgan State University

Valerie Caruolo, AIA
Hord Coplan Macht

October 2019

This study is a collaboration of Craig Gauden Davis, Morgan State University, The Salk Institute for Biological Studies and Terrapin Bright Green.

The purpose of this study is to examine to what extent the design of the physical learning space, enhanced with biophilic design, contributes to student stress reduction and improved learning outcomes for a middle school Math class at a public charter school in West Baltimore. The study presents findings of data collected from a biophilic classroom and a control classroom, where the physical design of each space varies—one is a traditional classroom while the biophilic classroom is enriched with views to nature, dynamic and diffuse daylight and biomorphic patterns. Data was collected by monitoring students' HRV (heart rate variation) as a measure of stress, comparing academic performance, student surveys, and student and instructor interviews.

15 PATTERNS OF BIOPHILIC DESIGN

Over the years, academics, researchers, and others have identified numerous design strategies for improving health and well-being in the built environment. Terrapin has codified this research into 15 patterns of biophilic design:

NATURE IN THE SPACE

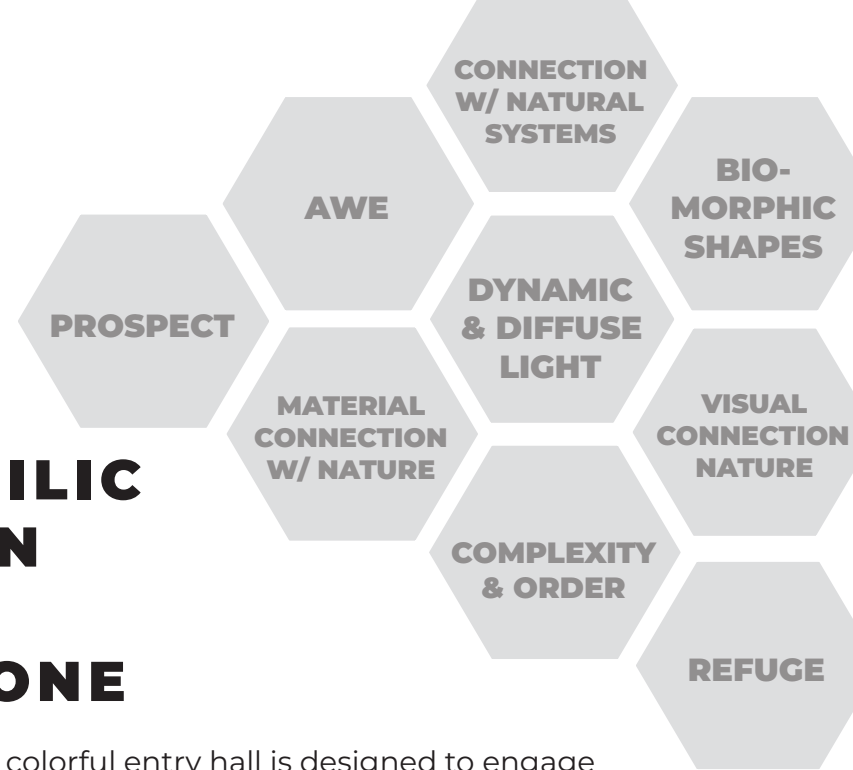
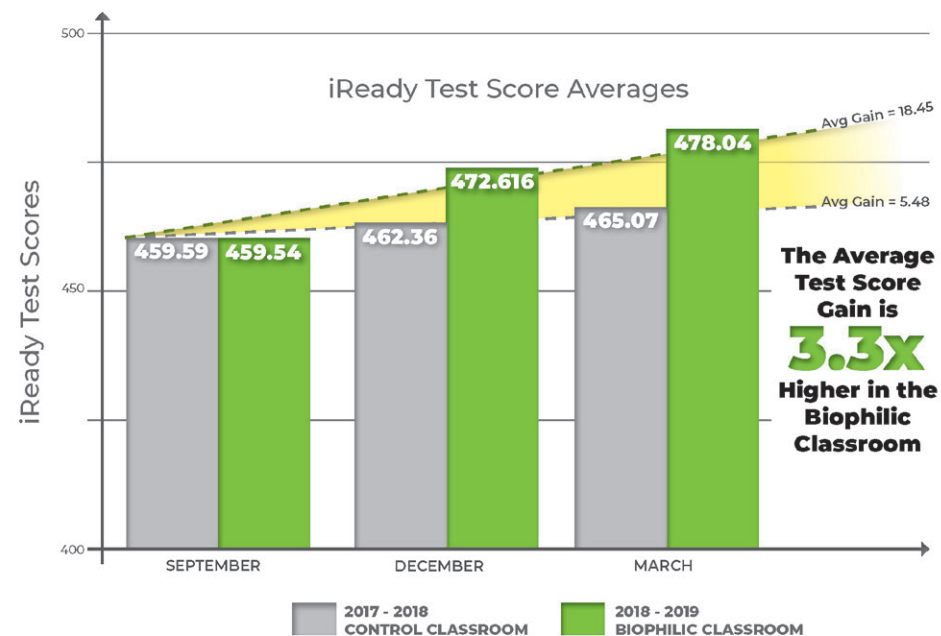
1. Visual Connection with Nature
2. Non-Visual Connection with Nature
3. Non-Rhythmic Sensory Stimuli
4. Thermal & Airflow Variability
5. Presence of Water
6. Dynamic & Diffuse Light
7. Connection with Natural Systems

NATURAL ANALOGUES

8. Biomorphic Forms & Patterns
9. Material Connection with Nature
10. Complexity & Order

NATURE OF THE SPACE

11. Prospect
12. Refuge
13. Mystery
14. Risk/Peril
15. Awe

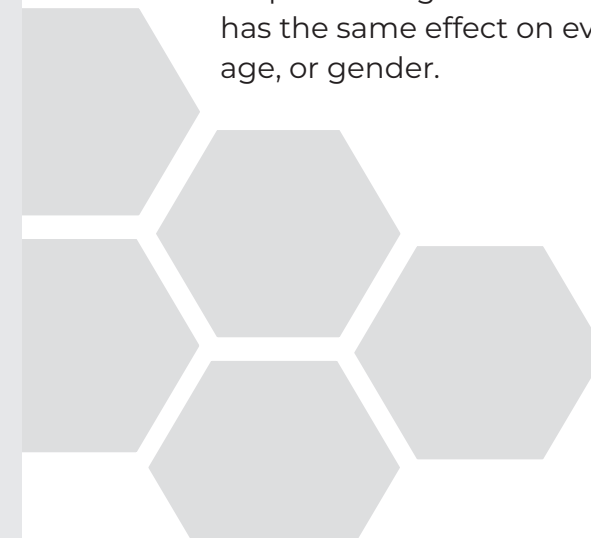


BIOPHILIC DESIGN SET THE TONE

The bright and colorful entry hall is designed to engage students' imaginations as soon as they walk into the school. The playful, biophilic space helps foster a sense of wonder, encouraging creativity. Colors, shapes, and patterns engage students in scientific thinking, problem solving, and exploration. Hexagon acoustical panels are an opportunity to teach geometry. The moving shadow patterns created by the curtain wall frit is a science lesson. Sensory and biophilic design features are intertwined to nurture positive emotional experiences and to enhance cognition.

Views of and access to the outdoors, natural lighting, natural materials, and imitations of natural environments are nearly everywhere in the building. Classrooms receive dynamic northern and southern light through large windows and many spaces use soaring ceilings with views to the outdoors and vibrant color palettes to inspire joy, wonder and awe.

Biophilic design cultivates equity. This design approach has the same effect on everyone, regardless of ethnicity, age, or gender.



SITE

The school's layout and placement on site are designed with safety, optimal daylighting, and community integration in mind.

At the onset of the project, strategically siting the building for North/South daylighting was a catalyst for many design features. Vehicular traffic is confined to the front and sides of the school allowing pedestrians to have vehicle-free, safe access to fields and outdoor play areas at the rear. Cars and buses access the site separately on long, winding, easily monitored approaches, and drop-off and pick-up occur at a single point of entry. The administrative office suite is directly adjacent to this main entry allowing for visible control as well as ease of access to the entire facility. A residential neighborhood sits to the north with a shopping center to the south. The western edge is an interstate with the beloved historical gym and a community park to the east.



Bus Loop Side

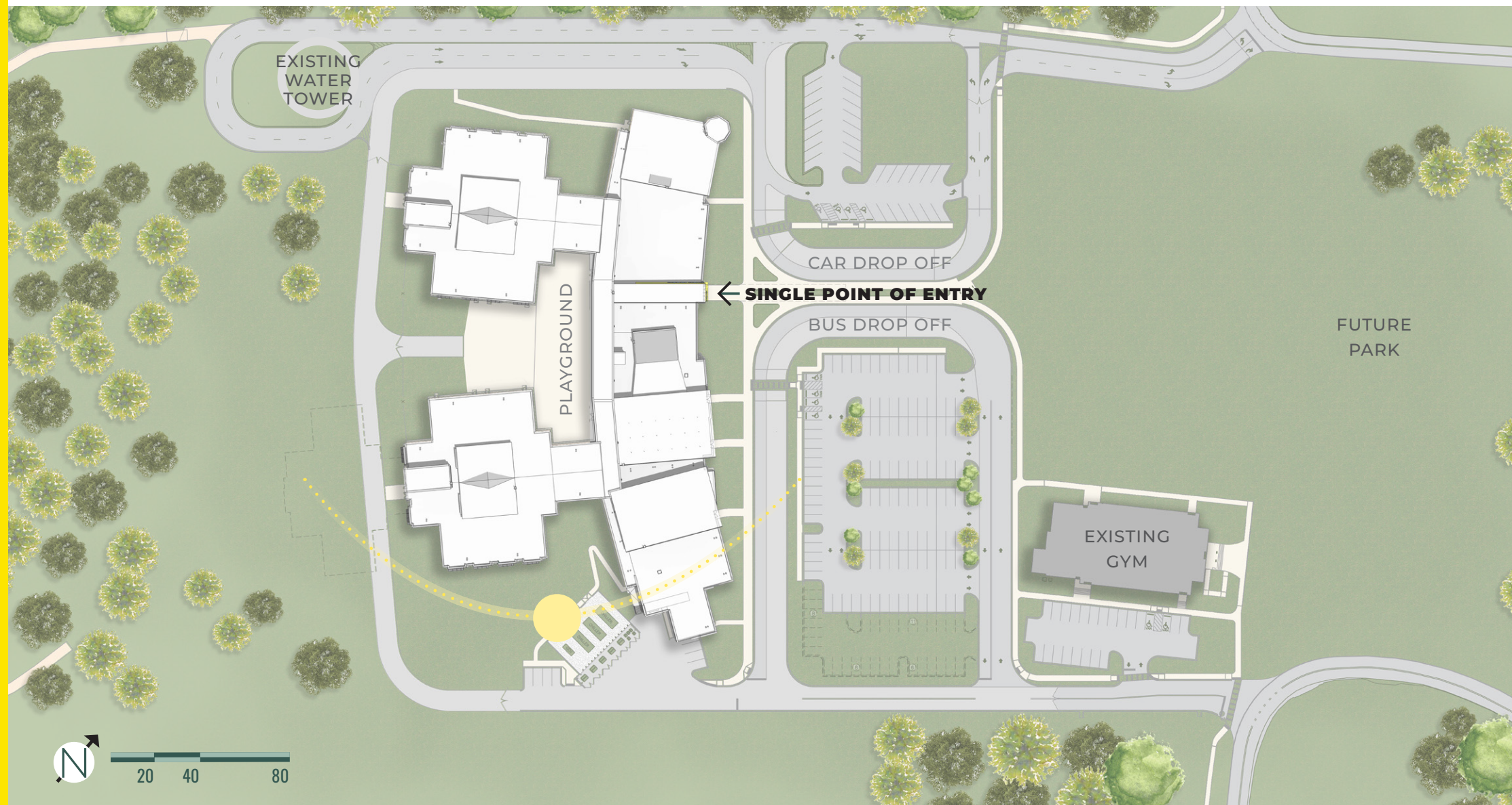
SAFETY

Single Point of Entry. A single point of entry allows administrators to monitor and greet each student as they enter the school and keep other perimeter doors secure. Other safety features are intended to be unobtrusive or invisible so that students feel secure and uplifted in their learning environment.

Natural Surveillance. The design relies on Crime Prevention Through Environmental Design (CPTED) evidence that natural surveillance and transparency are more protective than closing off lines of sight. BHES features clear lines of sight and an open layout with windows used extensively in the front entrance, corridors, classrooms, media center, cafeteria, and between interior spaces. To allow for this extensive use of glass, the design includes ballistic glass at the front entrance, bullet resistant film on all exterior windows, and Level 3 (the highest level of safety glass) in the interior.

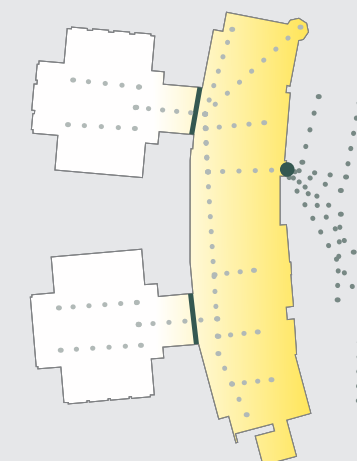
The classroom pods located beyond the main street corridor have steel doors on hold opens that are released and locked with the push of a button. The pods are designed to function as separate buildings in the case of a fire or seismic event, and students may exit into an adjacent pod and be safe. A door numbering system was installed at exterior doors so that emergency personnel can easily identify locations in the building and a drive encircling the facility allows full fire truck access.

The playgrounds are located in a courtyard that is shielded by the building on three sides to create a secure area outside the facility.



SECURITY

- one entrance -



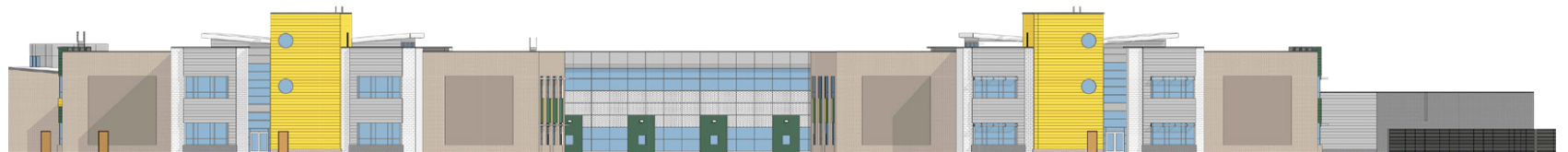
4 PHYSICAL ENVIRONMENT



SOUTH



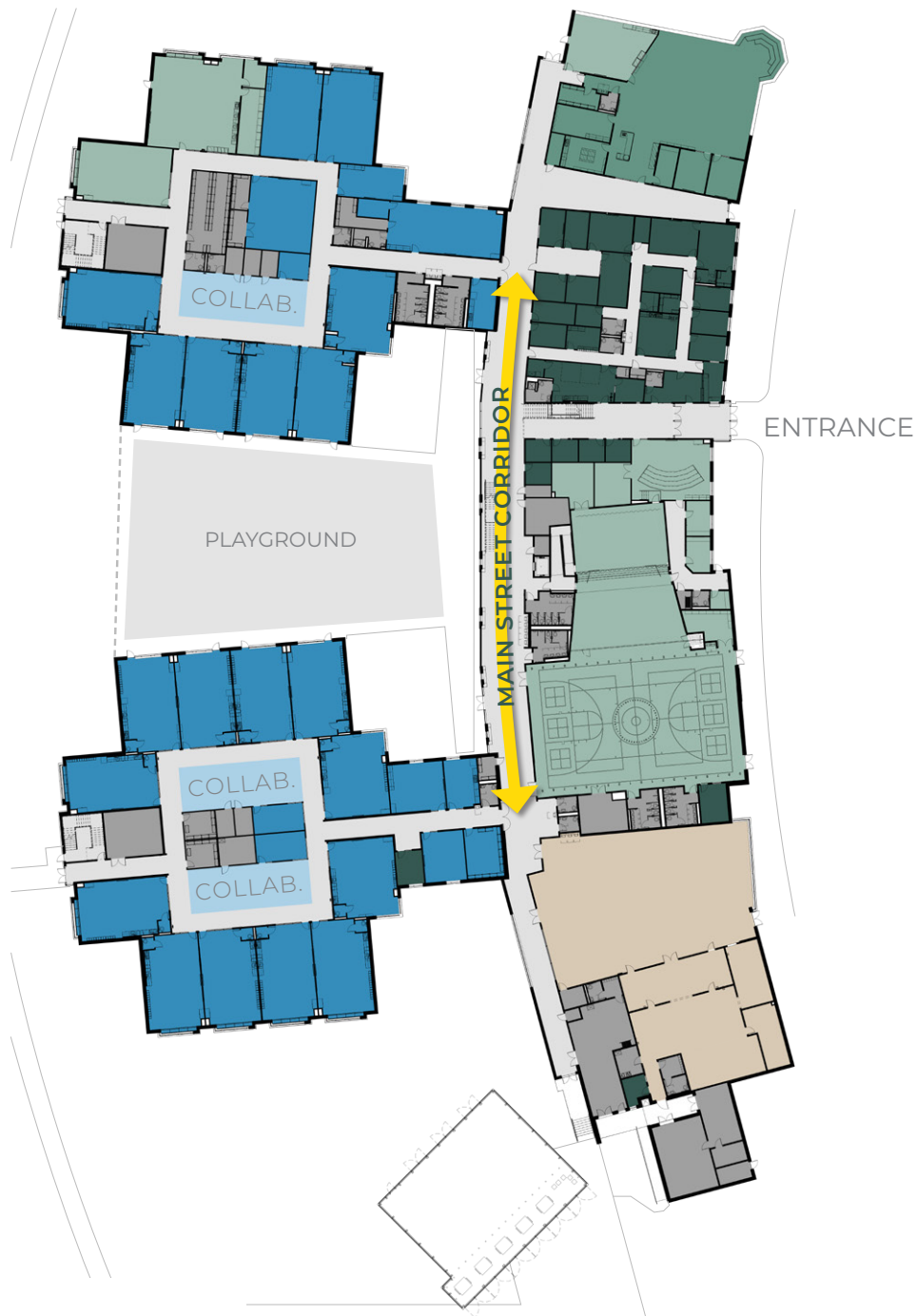
WEST



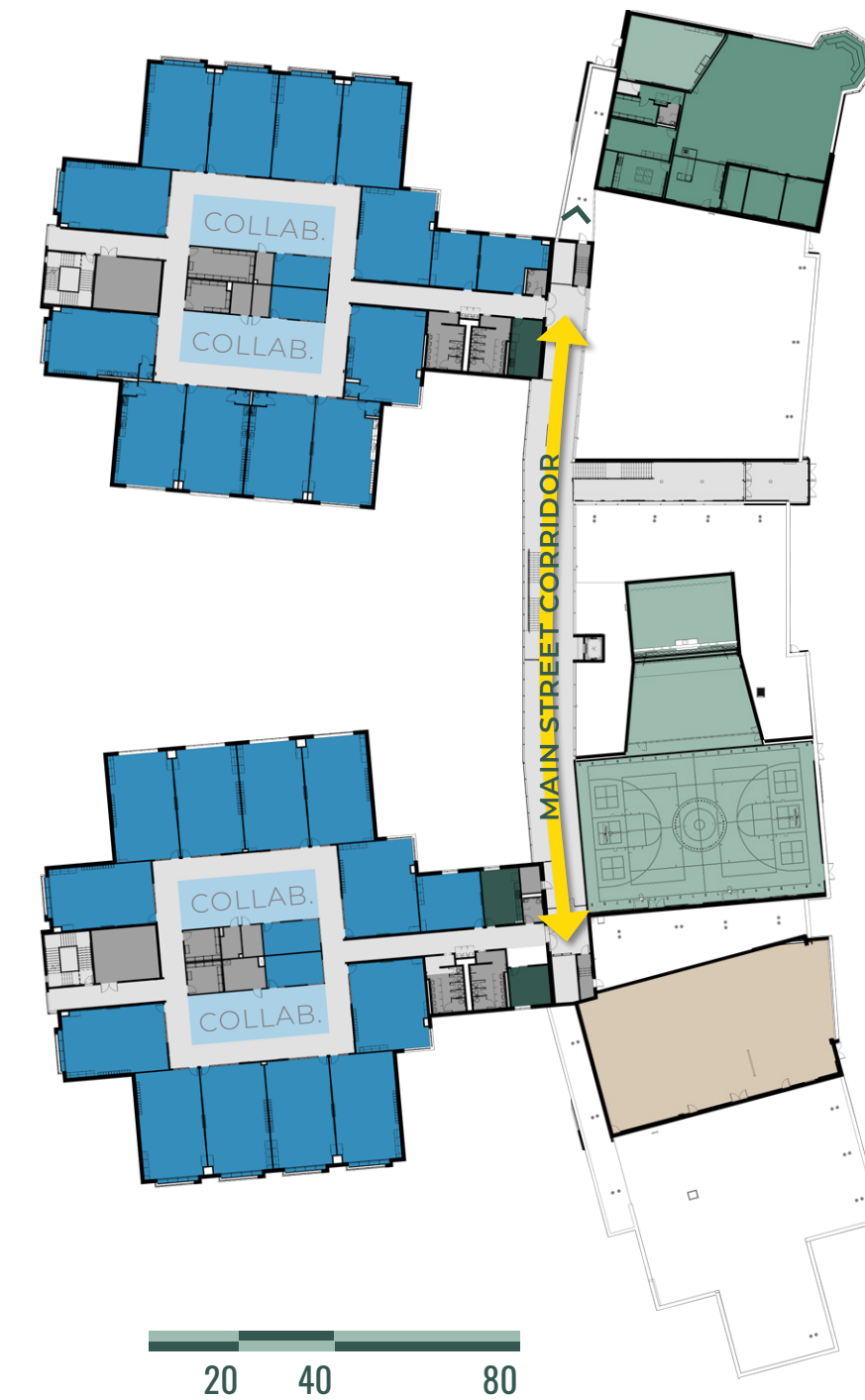
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PHYSICAL ENVIRONMENT

LEVEL 1



LEVEL 2



- ADMIN & HEALTH
- BUILDING SERVICES
- CIRCULATION
- CLASSROOMS, SPECIAL ED, & GIFTED
- MEDIA CENTER
- ARTS & FITNESS
- KITCHEN & CAFETERIA
- COLLABORATION
- MAIN ST. CORRIDOR



WELL-BEING MOMENT

PLACE-MAKING



BIOPHILIC MOMENT

MATERIAL CONNECTION TO NATURE & BIOMORPHIC FORMS

Right: Entry View

ENTRY SEQUENCE

Along the arrival path, students, parents, and staff are greeted with lush planters, foreshadowing the biophilic design elements utilized throughout the design.

Once inside, they are greeted by a bright and colorful entry hall that begins their journey through an abundance of nature's forms. A frit pattern was added to the window glazing that casts dappled light shadows on the floor, creating a calming effect as students enter and leave the building. As they continue down the entry hall, honeycomb patterned acoustic panels relate to their school brand and they are reminded of the history of the school by the integrated design of a graphic of the original school directly in front them, backlit by cascading light fixtures and a two-story wall of glass.



BIOPHILIC MOMENT

VISUAL CONNECTION WITH NATURE



SUSTAINABILITY: Acoustic Panels Made From Natural Materials And Certified By The Forest Stewardship Council



CONNECTION TO HISTORY & PLACE

WELL-BEING MOMENT



95% of parents feel that their children are safe in the school.

Top: Single Entry Point
Lower Left to Right: Entry View; Bulkhead Graphic of original school; Entry Exterior with Frit

MAIN STREET

Students travel throughout the school along an easy-to-navigate, curved, central “Main Street” corridor with views of nature via a two-story glass wall.

Similar to the entry glazing, the “Main Street” glass is also ornamented with the same fritted glass pattern casting a timed light show of dappled light for passers-by. Traversing main street between classrooms and public spaces is reminiscent of walking under a tree canopy with views of a landscaped courtyard. A palette of colors found in nature, natural birch wood ceiling and rails, and biomorphic hexagonal-shaped acoustical wall panels that create a honeycomb pattern also provide a connection to natural materials.

Several techniques are employed to break down the scale and create simple wayfinding in what otherwise would be a massive, daunting building for small students. Each large space is broken down into smaller more easily understandable modules. For instance, the main street corridor is constructed on a segmented curve which visually reduces the overall length of the space. It is further broken down by undulating, alternating, ceiling applications, and further still broken down by floor patterning, railing modules, and reading nooks with window seats. In addition to breaking down the scale of the building, the reading nooks were located along the “main street” corridor to support social and emotional health. Long vistas, or prospect, present a calming effect for all and effective supervision for administrators.

BIOPHILIC
MOMENT

A shading study determined the frit pattern shadows would activate the main entry and ‘main street’ with dappled light during peak travel times giving kids a calming entry or exit.

2PM

3PM

4PM

STUDENT-
CENTERED
LEARNING
MOMENTDIFFERENTIATED
LEARNING
ENVIRONMENT

PHYSICAL ENVIRONMENT

PUBLIC SPACES

West of “main street” is the public face of the building with community spaces for use during and after-hours such as: administrative offices, cafeteria, gymnasium and multi-purpose performance space, media center, and maker space.

These communal active-learning areas are notable for their soaring heights with visible structure and light-filled, bright, and airy ambiance.

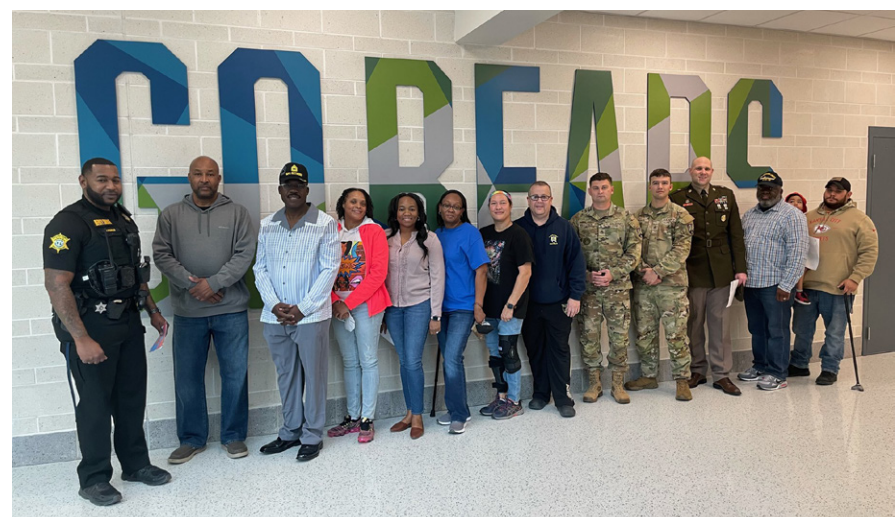
The cafeteria features extensive glazing allowing a community connection to the dining experience. A large wall, visible to the community, a graphic featuring Ms. Annie E. Hanberry and her wise words, provides connection to the school's history and place.

“The picture and the quotes from Miss Hanberry almost brought tears to my eyes. To know the history of the school and to know her and what she envisioned for this school, and that you are a part of her legacy for generations of students. I get chills just thinking about it.”

- Literacy Coach



WELL-BEING MOMENT
CONNECTION TO HISTORY & PLACE



Top Row: Cafeteria; Media Center

Below: 'Main Street'; Gym on movie night; Gym/Performance Space

PHYSICAL ENVIRONMENT

MULTI-PURPOSE GYMNASIUM AND PERFORMANCE

At Bethel-Hanberry, the stage and a multi-purpose performance space in front of the stage are separated from the gymnasium by a movable partition allowing students to rehearse without interrupting gym class.

The performance area can be easily opened to allow for more viewing area or closed depending on programming. On performance evenings, when the community is invited to engage with the school, the partition opens to a full-sized gymnasium that provides ample space for popular community events. To control access to the rest of the school, public toilets are located

within the gymnasium. For convenience, the music room and dressing areas back up to the stage and provide direct access.

In the gym, high windows allow daylight to enter without disruption to play with a natural color palette and materials, and biomorphic patterns woven into the design.

ACOUSTICS for all high-activity spaces required sound dampening:

- Cafeteria: Suspended Baffles
- Gym: Acoustic Wall Panels
- Multi-purpose room: Acoustic Wall Panels
- Performance Space: Sound Clouds designed from inexpensive tile ceiling systems



STUDENT-CENTERED LEARNING MOMENT

LEARNING INCORPORATED INTO PHYSICAL ENVIRONMENT



Left: Gymnasium
Right, Top to Bottom: Shared Gym/Performance Space; Performance set up, Gym with partition closed

MEDIA CENTER

The media center, designed to create the experience of awe, is characterized by a soaring height, octagonal learning corner, with dynamic floor patterning, and a 180-degree view of the lush natural environment surrounding the school.

The layout and furnishings provide a variety of spaces for every type of learner, including the 'campfire' area with tiered seating, colored glass, and dynamic light fixtures. Low bookshelves along the wall provide security and frame the views of the trees while blocking views of the carpool line.

Dynamic and colorful carpets visually draw students to the space and biomorphic sound panels and light fixtures above the reading nook provide added interest.

The library is a colorful light beacon at night drawing attendees for school meetings and community gatherings.



PHYSICAL ENVIRONMENT

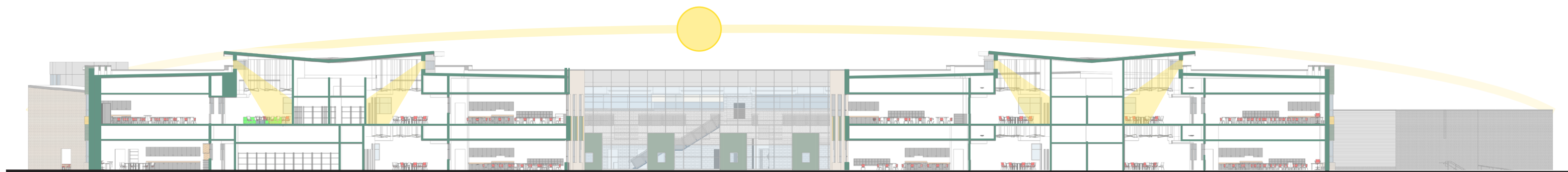
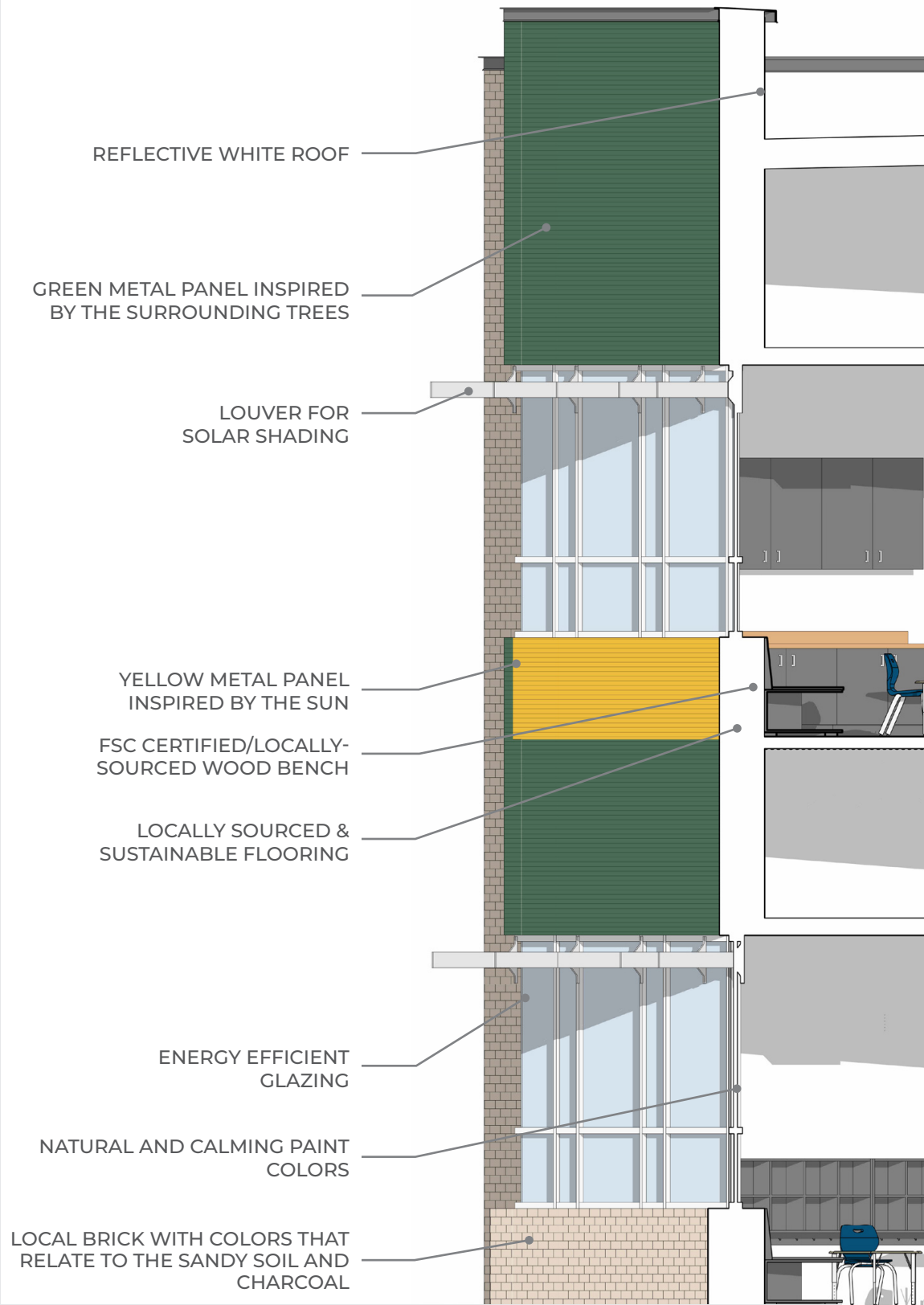
Shannon Gallagher
How can you not love to read while sitting in this media center? 🥰 Can't wait to be fully unpacked and decorated.



SUSTAINABILITY

- **Glazing Products:** Excellent solar control, far exceeds minimum code standards for solar heat gain coefficient and low-e coating.
- **Shading Devices:** Strategically designed and placed exterior and interior shading devices to further reduce the heating and cooling loads that would ordinarily be required in a structure with such large expanses of glass.
- **Reflective White Roof:** Crowns the entire structure to bounce light back into the atmosphere; contributes to reducing urban heat island effect of this rapidly growing community.
- **Low Usage Plumbing Fixtures** with sensors to reduce the amount of water and sewage use.
- **Exterior Materials:** Local brick and block, metal panel, and glass storefront/curtain wall. Limiting the number of finishes within the palette allows for less maintenance.
- **HVAC:** State-of-the-art equipment to provide high air quality, including fresh air intake, and prevent climate control issues occurring from the hot, humid region.
- **Touchless Systems:** Electric air hand dryers, water bottle filling stations.
- **Interior Materials:**
 - > **Carpet:** Manufacturers that use waste stream to recycle into flooring. Products are made from plastic bottles, windshields and safety glass.
 - > **Vinyl Enhanced Tile:** Phthalate free products; no wax; no VOC; contain recycled content. Maintains industry-average Environmental Product Declaration of transparency by providing information on the raw materials, production/environmental impact of resilient flooring products.
 - > **Solid Surface:** Verified through Environmental Product Declaration, the products specified offer a durable, non-porous surface, which contribute to a long-lasting product with raw materials sourced and manufactured within 500 miles of the project site.
 - > **Laminate:** Engineered using 2x more post-consumer recycled content than any other laminate brand, using an average of 23% post-consumer recycled content, and contributing to sustainable projects which reduce waste over the long term. All post-consumer recycled content is sourced responsibly from North America.
 - > **Sports Flooring:** Offered as the only sports flooring with solutions in Class 1 through Class 4, of the ASTM F2722 standards, the product specified delivers a high level of performance, while also being certified for low-VOC emissions and indoor air quality. In addition, this product offers a 100% recycling rate.
 - > **Rubber Flooring:** Certified Cradle to Cradle Bronze, Red List Approved, and Declare Labeled. Additionally, this product is free from the following chemicals: Cadmium, Chlorine, Lead, Mercury, PBDE, PFAS, PFOA, PTFE, PVC, and Phthalates.

INSPIRATION, PAINT, AND FINISHES



STUDENT-CENTERED LEARNING

The design intent at BHES integrates the educational and physical environment so that teaching modalities and student needs are fully supported.

Unified in a uniquely-identified learning community, each grade level is defined by a cluster of classrooms organized around open collaboration spaces and small group rooms. This model allows for differentiated learning,

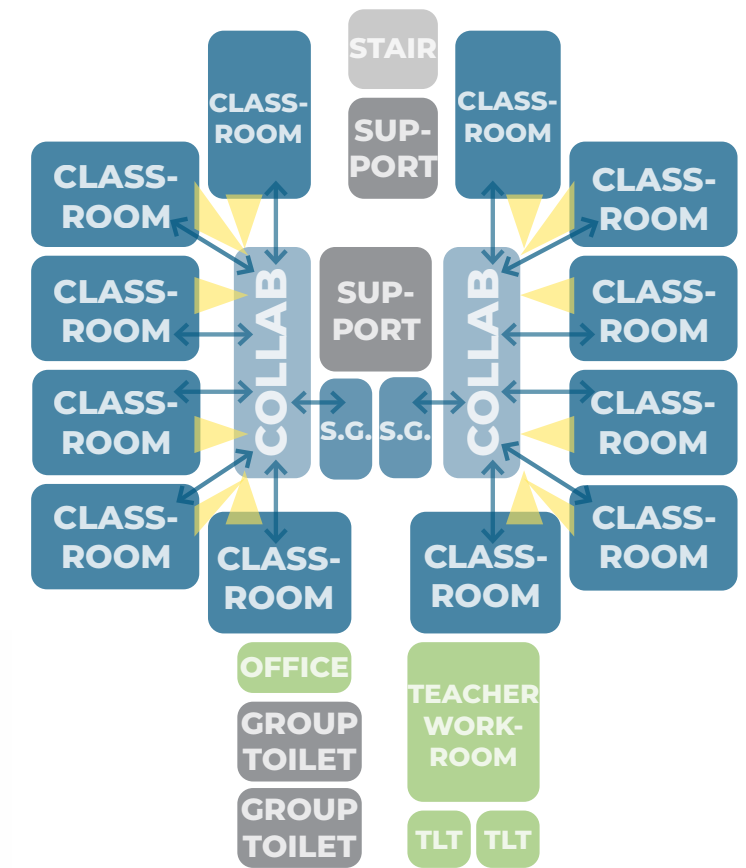
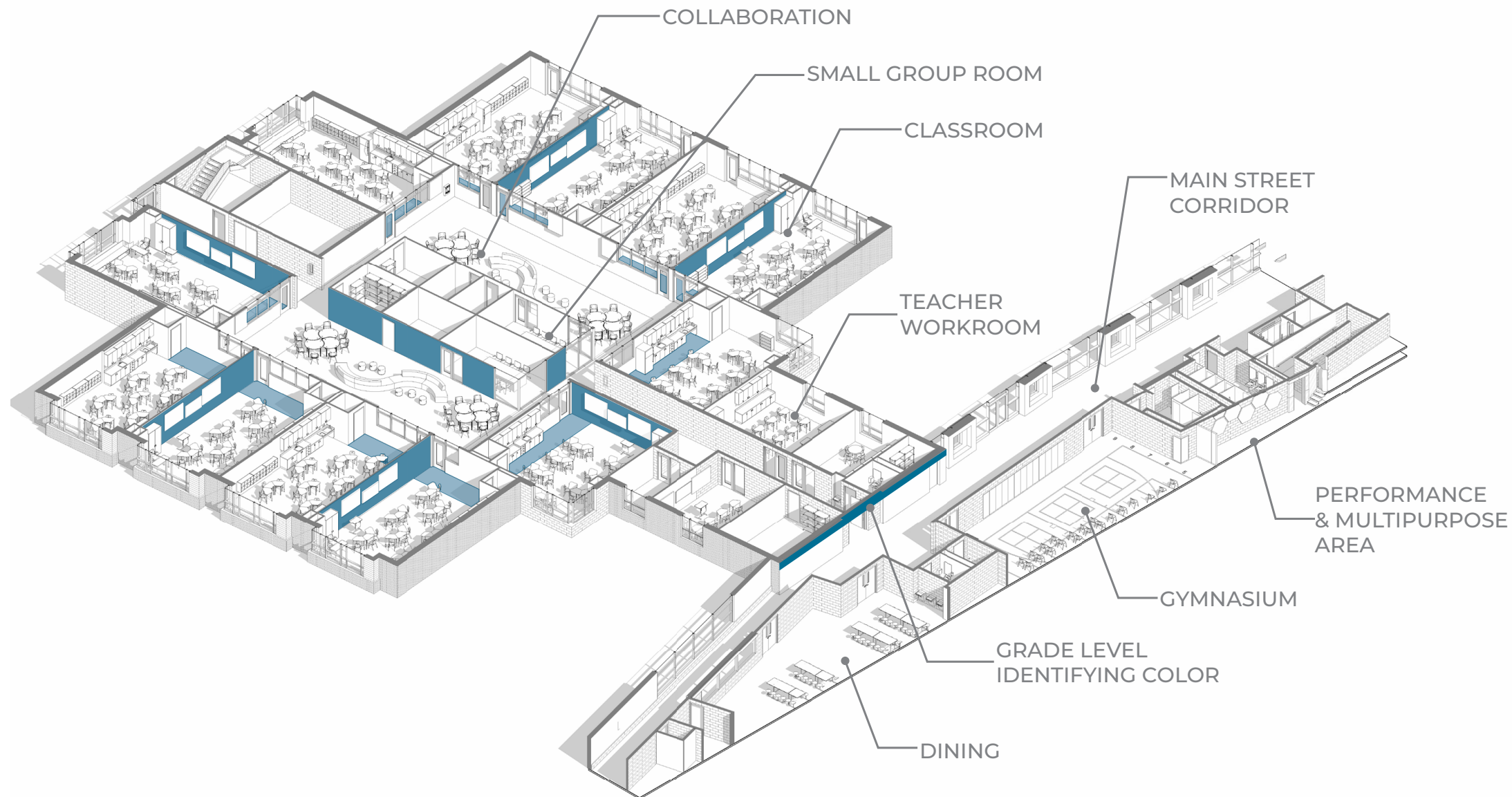
accommodating students entering their grade on different academic levels with different academic and emotional needs.

By clustering classrooms around shared spaces and extending learning beyond the classroom to the entire school and outdoors, the design affords a wide variety of learning opportunities without a larger building size, thus keeping costs down.

Outside of the traditional classroom space, going to learning destinations like adjacent small group rooms, the makerspace, or seating nooks in the

main corridor make learning fun and practical by engaging students as active participants.

Additionally, BHES incorporates intentional design elements that seamlessly integrate with STEAM standards, enhancing both the aesthetic appeal of the school environment and its educational relevance. For example, using geometric shapes and patterns in ceilings and floors are attractive and provide a visual connection to science, art, and mathematical concepts.



MAIN STREET CORRIDOR

VISUAL CONNECTIONS

When students can work within visual contact of their classroom, teachers are empowered to use a variety of teaching methods and create personalized learning environments, tailored to individual and evolving student needs.

During the design process, teachers chose how to best connect to the collaboration space outside their classrooms and selected windows with transparent glazing, wall space for student storage, and a partial wall for added security.

STUDENT-CENTERED LEARNING - CLASSROOM

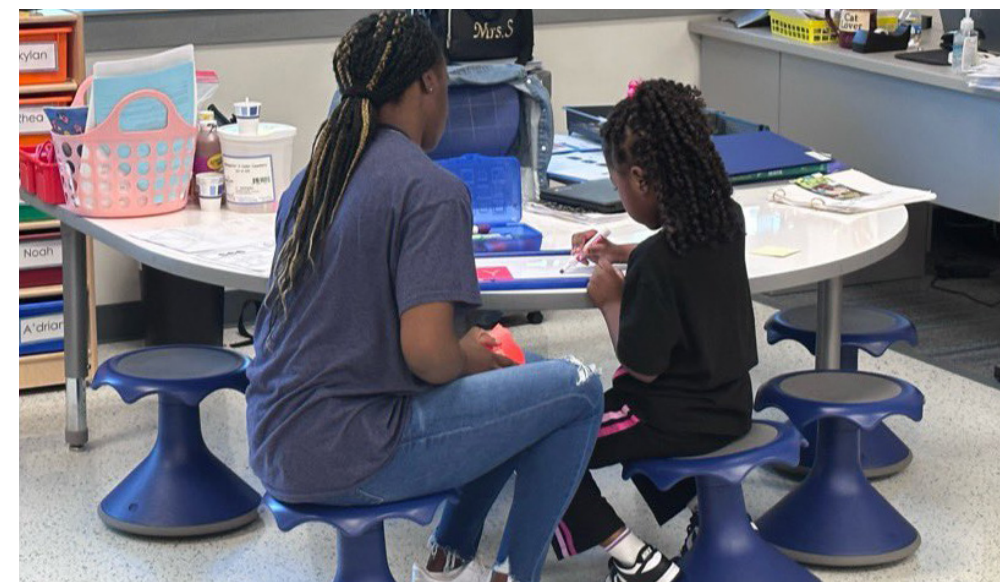
Classrooms are designed to be adaptable with mobile, flexible and reconfigurable furnishings where teachers can arrange students, or students can arrange themselves, in various ways that align with the pedagogy and become effective and inspiring learning places.

All classrooms have large windows and North-South solar orientation which optimizes even natural lighting. Placement of benches in front of the windows provides students with a connection to the outdoors and constant views to nature.



STUDENT-CENTERED LEARNING MOMENT

PERSONALIZED TEACHING & LEARNING



EQUITY

The BHES curriculum is based on SC Learning Standards designed to promote the skills of collaboration, communication, critical thinking and creativity for all students.

The student-centered learning spaces at BHES support teachers in meeting these standards by providing the flexibility to simultaneously use multiple instructional strategies including direct, indirect, experiential, independent, and interactive. Flexible spaces allow for personalized learning environments. Supporting this variety, each collaboration area has a writable accent wall, mobile smart boards, and small group rooms to support additional learning styles.

At BHES, an agile, active learner is supported with an agile, active social and physical learning environment. A variety of furnishings and soft carpeting allows students to choose their preferred learning setting, fostering a sense of agency, promoting communication, collaboration, positive social behaviors, and problem-solving skills, which ultimately leads to increased motivation, engagement, and academic achievement.

Below:
Collaboration Space



Dynamic lighting fixtures in different shapes, hung at varying angles are employed to spark curiosity and creativity. On the upper floors, a butterfly roof structure was designed with clerestory windows such that the space is flooded with natural light from above.

- BIOPHILIC MOMENT
- STUDENT-CENTERED LEARNING MOMENT
- BIOMORPHIC SHAPED LIGHTING & CLERESTORY WINDOWS
- FLEXIBILITY

WELL-BEING

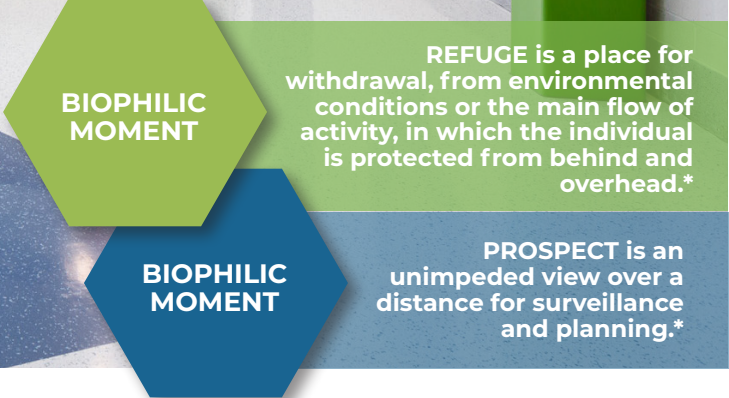
Social emotional learning and well-being are supported by spaces where students can take refuge and a reflective respite, or choose to collaborate, learn, or play.

For small groups, nooks on the first level in the main street corridor allow for unimpeded views through the corridor and to the playground and provide a place of learning and relaxation apart from the main flow of traffic with walls on three sides. Similar nooks on the second level in the main street corridor provide the same views and refuge, as well as bright and dynamic views to the first level.

In the gym/performance area, students showcase talent and are instilled with confidence from presenting in front of large groups of people. On performance evenings, the community is welcomed into a full-sized gymnasium that provides ample space for popular events. Atypical for elementary schools in the surrounding area, the gymnasium/stage is intentionally designed to support a variety of play and exercise for use by students, and the community on weekends and after-school hours.

In the gym, different colored lines denote a variety of sports, and numbers and letters embedded into the flooring promote active learning.

Active, hands-on learning is also supported by a makerspace with access to the outdoors. Integrated power, a sink, and flexible furnishings allow students to create, build, and conduct STEAM activities. A window display case that faces the media center was designed for students to showcase their work to all who passby, thus instilling a sense of ownership and pride.



*Browning, W.D., Ryan, C.O., Clancy, J.O.: (2014) 14 Patterns of Biophilic Design: Improving Health and Well-Being in the Built Environment. New York: Terrapin Bright Green, LLC.

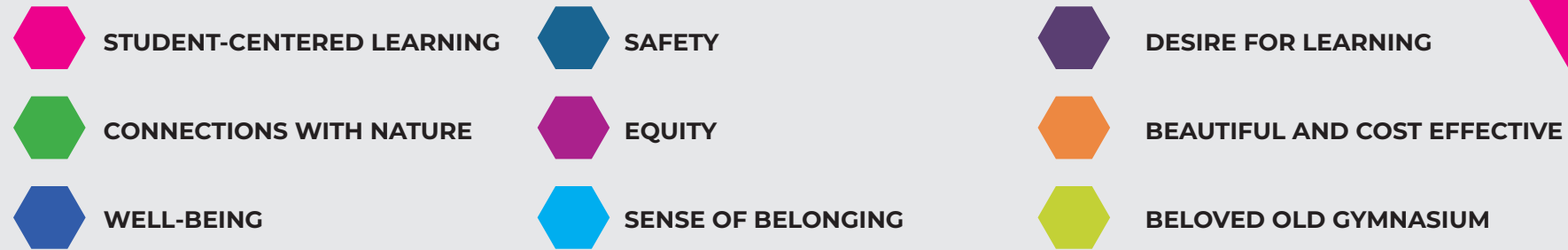
Above: 'Main Street' Nooks
 Left: Gym/Performance
 Lower Left: Gym
 Lower Right: Outdoor Physical & Visual Connections

ASSESSING THE EFFECTIVENESS OF THE DESIGN

One year after BHES opened, the district and the design team took the unusual step of assessing how well the facility met the nine focus goals.

Surveys were submitted to all students and their parents in grades 3-5, teachers in grades K-5, and administrators, and were completed by 325 students, 41 parents, 53 teachers, and six school and district administrators. Additionally, interviews were conducted of a sample of students, teachers and administrators, and since the new BHES replaced the original school, test scores and climate survey results were compared between the first year in the new school and the last year in the old.

FOCUS GOALS



STUDENT-CENTERED LEARNING

“Students feel like this school was designed for them to get whatever they need and learn how they learn best.”

- BHES Teacher

In the surveys,

STUDENTS

- 76% of students reported that the building helps them learn
- 79% reported that they like having choices about how they learn
- 88% reported that they like having collaboration spaces to work with classmates.

TEACHERS

- 98% of teachers reported that the new school facilitates improvements in student learning
- 100% reported that the new building promotes student-centered learning by supporting a range of teaching approaches

- 96% reported that the collaboration spaces contribute to a positive learning environment

- 96% reported that the building offers students with different learning styles a variety of ways to learn.

PARENTS

- 91% of parents reported that the new school has improved their child’s learning experience.

ADMINISTRATORS

- 100% of administrators reported that the new school facilitates improvements in student learning and promote student-centered learning.

In response to open-ended survey questions and in the interviews, students reported that **in the new**

school it is easier to focus, think, learn, and be creative.

A student said, **“I’m in just a happy place when I’m at school. And being able to move around and go in all these different spaces in the school helps relieve the pressure that I feel sometimes.”**

In response to open-ended survey questions and in the interviews, teachers said that the new school design has a positive effect on student learning, enthusiasm, attention, and engagement. A literacy coach said, **“I just want to say kudos to the designers of this building. I have really enjoyed the space, the area. And when I think about how it supports student learning, I can say as a literacy coach that it has really been a tremendous success.”**

98%
of teachers reported that the new school facilitates improvements in student learning

100%
of administrators reported that the new school facilitates improvements in student learning and promote student-centered learning.

98%
of teachers said the new school supports being more innovative in their teaching.

95%
of teachers reported the design of the new school promotes a sense of community and belonging among students and teachers.

100%
of parents said that the graphic displays of the school’s history throughout the school promote a sense of community.

“I had a student who was emotionally taxed. He asked to sit on our window seat and look out at the trees as a way to self-monitor until he was ready to join the group.”

- BHES Teacher

“Being in this building forces me, a little bit more, to come up with more modern ideas.”

- 4th Grade BHES Teacher



“There’s been a decrease in the overall number of referrals and the severity of the infractions...the sense of calm that’s promoted throughout the building makes a difference, and it manifests in student behavior.”

- BHES Assistant Principal

Student Performance Data

School, district, and state-level performance data were analyzed after the first year in the new school versus the last year in the old school. The data showed significant improvements in standardized test scores, teacher retention rates, frequency and severity of disruptive behaviors, and chronic absenteeism. BHES exceeded seven of eight, and met the eighth, growth projections for reading and math proficiency. The BHES principal reported that “the academic performance improvement the first year in the new school was fantastic and highly motivating!”

Teacher retention rose 7.8% from 83.7% to 91.5%. BHES experienced among the highest increases in teacher retention of the 24 elementary schools in the district, and 10 times the increase in district-wide teacher retention which increased from 81.2% to 81.9%. Teacher attendance increased from 93.4% to 94.4%. One teacher stated, “I’m in my 28th year of teaching and this has been, by far, the best workspace.”

BHES improved in every behavior-related South Carolina School Climate Survey measure. BHES tied for having the greatest chronic absenteeism reduction in the school district, from 17.3% to 12.3%. Out of school suspensions per year went from 22 to 17.

SC Dept. of Education reports that Chronic Absenteeism was 14% before COVID and 24.73% for the 2021-2022 school year. In the first year in the new school building, BHES tied for having the greatest reduction in the district in chronic absenteeism, from 17.3% to 12.3%.

CONNECTIONS WITH NATURE

“Every day when I’m walking through the halls it feels like I’m walking under trees when the sun comes through. There is a little reflection on the floors and I jump in the sunlight because I like playing in nature,” one student said.

By far the most common reason for positive responses to biophilic design survey questions was the natural light for its calming effect, mood-boosting and happiness-promoting properties, support of students’ concentration and focus, and its creating a bright, inviting, and comfortable atmosphere. Teachers also think that the views of and interactions with nature and nature-mimicking interior elements benefit students.

Students responded in the interviews that the bright, happy colors, the windows’ natural light and views to nature, and interior natural elements make them feel better, more relaxed and comfortable, and less stressed.

One student said, **“One thing that makes me happy is how they made the cover for the windows look like leaves. It looks really cool to me.”** Students reported that they learn differently in their new school building, and among the most frequent reasons why were sunlight and the views to the outside.

Teachers said that they love the natural light, views to nature, the colors, and open floor plans, improving their attitudes and happiness, and think those are having a positive effect on students too, saying that they seem happy from all of their smiles. One teacher remarked that the windows were small and few in the old school, the change to the new school “really does make a difference.”

Biophilic design also contributes to sustainability efforts in that the abundance of natural light allows the facility to reduce the use of artificial lighting, further reducing their power usage and cooling requirements.

Percent of respondents who said

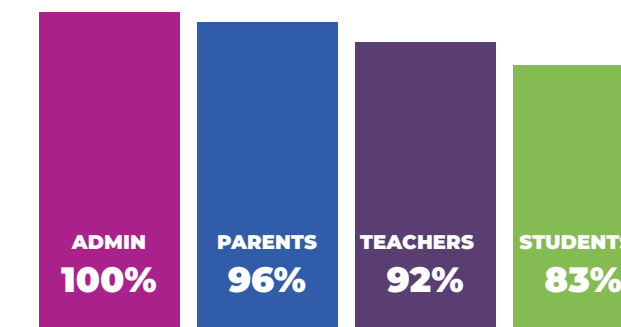
Biophilic design elements contribute to the learning and teaching environment, create more enriching and uplifting educational spaces, and ultimately improve academic performance and enhance mental emotional well-being.

Teacher Retention
BHE experienced among the highest increases in teacher retention of the 24 elementary schools in the district.
 Districtwide teacher retention increased from 81.2% to 81.9%

10x
Teacher Retention Increase
 Retention rate rose from 83.7% to 91.5% from prior year.

Absenteeism
 SC Dept. of Education reports that Chronic Absenteeism was 14% before COVID and 24.73% for the 2021-2022 school year.

5%
Absentee Reduction
 BHE tied for greatest reduction in chronic absenteeism, from 17.3% to 12.3%.



WELL-BEING

“In the new school building, I feel safe, loved, happy, comfortable, excited, and smart,” one student said.

Student comments include,

“I don’t really know how to explain it but the colors just make me feel happy, safe and at peace.”

“I think students are 1,000% happier here in this beautiful new school. We walk in and go ‘Wow. Just Wow.’ Some people miss the old school but this one makes you feel more open, mindful, and especially cheerful.”

“I’m in just a happy place when I’m at school. It helps me learn because I don’t work better under pressure.”

SAFETY

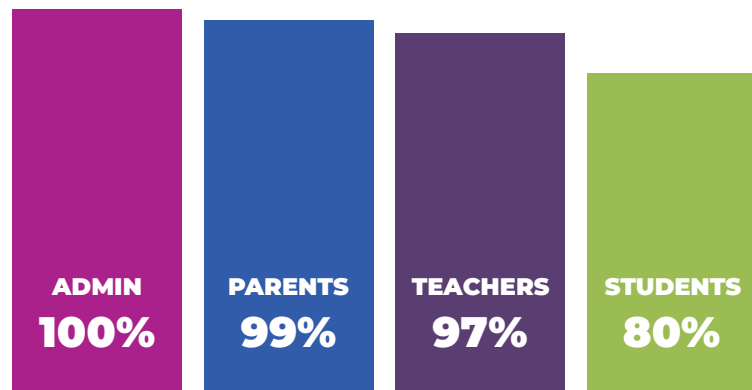
“What I love about this building is that it keeps me safe, and makes me feel that I’m safe,” one student said.

In the surveys,

- 88% of students reported feeling safe.

Percent of respondents who said

The school contributes positively to the students’ sense of well-being.



- 95% of parents feel that their children are safe in the school.
- 82% of teachers reported that the safety measures have helped to create a safe learning environment.
- 100% of administrators reported that the safety measures have helped to create a safe learning environment.

When students and parents were asked how they feel differently in the new school, one of the most common answers was that they feel safer. One student reported that the glass and open views makes her feel safer, saying **“It helps me feel secure because I can see what’s going on outside of those lines in my classroom and in the old school. I couldn’t do that. I can see like everything.”**

One administrator said that parents, teachers, and staff are definitely feeling much safer. She said, **“We don’t have so many entry points as we had in our former school. And with the entry doors being numbered, that makes a huge difference. So we know when you say 16, where to go.”**



She also said,

“Students mentioned feeling more secure and connected because they can see what is around them and know that teachers can see them even when they are working outside the classroom.”

The school improved in every safety-related South Carolina School Climate Survey measure. The comparison of the first year in the new facility versus the last year in the old facility shows a 9.8% increase in students feeling safe at school and a 5.9% increase in students feeling safe before and after school.

EQUITY

“I think the architectural design lends itself to an equitable and culturally responsive environment for all students to feel like the school is their school and to feel welcomed,” one teacher said.

In the surveys, 100% of teachers reported that the new school design accommodates students with different

learning needs, abilities, styles, and backgrounds.

SENSE OF BELONGING

“It’s a really warm feeling when I walk into the school, I think it is very welcoming,” one student said.

A student said, **“It makes me feel a connection to the history of the school. The picture of Miss Hanberry in the cafeteria makes me feel like she’s still here.”**

In the surveys,

- 77% of students reported feeling welcomed in the new school.
- 84% of students reported liking the new school.
- 95% of teachers reported the design of the new school promotes a sense of community and belonging among students and teachers.
- 100% of parents reported that their family feels welcomed in the new school.
- 100% of parents reported that their children are happy in the new school.
- 100% of parents said that the graphic displays of the school’s history throughout the school promote a sense of community.
- 100% of administrators said that the graphic displays of the school’s history throughout the school promote a sense of community.

In response to open-ended survey questions and in the interviews, teachers said that the pod design and collaboration spaces in particular promote a sense of community and belonging.

DESIRE FOR LEARNING

“I want to keep learning about the school building. I need to know more. Yeah, a lot more!” one student said.

In the surveys,

- 98% of teachers reported that the building fosters a sense of wonder and curiosity.
- 100% of teachers said that the building itself can be used as a teaching tool.
- 100% of administrators said that the building fosters a sense of wonder and curiosity

“The design allows for all students to feel welcomed and does not single out a particular culture, ethnicity, or gender.”

“I feel this new space really supports the whole child, not just the academic part, but social and emotional well-being.”

100%

of parents reported that their family feels welcomed in the new school.

100%

of teachers said that the building itself can be used as a teaching tool.

98%

of teachers reported that the building fosters a sense of wonder and curiosity.

“The academic performance improvement the first year in the new school was fantastic and highly motivating!”

- BHES Principal

“I’m in my 28th year of teaching and this has been, by far, the best workspace.”

- BHES Teacher



4th Grader Interview

- 100% administrators said that the building itself can be used as a teaching tool

One fourth grade student said that she notices the details in the building every day and thinks **“Who thought of that? I need to go talk to them right now to know how they thought of this!... There’s so much to learn just from the building materials, colors, shapes, and patterns, and a little math practicing lines and symmetry just by looking at the ceilings.”** Teachers reported that the views of and interacting with nature and nature-mimicking interior elements encourage exploration and connecting students with nature and the world around them.

BEAUTIFUL & COST EFFECTIVE

One student’s comment represents the consensus opinion, **“It’s beautiful, just beautiful!”**

The project was completed 10.25% under budget, with a project cost of \$38.1 million versus a budget of \$43.2 million.

BELOVED OLD GYMNASIUM

The old gymnasium was made accessible, and a park was constructed around it. It is being used as a community center.

UNINTENDED CONSEQUENCES

The research-driven design strategies applied at BHES exceeded expectations in terms of the level of agreement and enthusiasm across all groups that the facility itself facilitates learning and well-being, and the extent to which student outcomes improved. In addition, the SC State RSD2 Department of Education representative responsible for addressing chronic absenteeism plans to use information about the BHES reduction in chronic absenteeism to help other schools statewide. From the perspective of the Director of Research Assessment and Evaluation expressed that the outcomes are significant and especially impressive in this post-Covid period and in a time of severe teacher shortages. One other unexpected achievement is that even though the percent of students in poverty increased by 5% during year one of occupancy the academic performance improvement exceeded expectations.

CONCLUSIONS

The BHES’s unique integration of biophilic and student-centered learning designs have been successful in improving academic performance and student well-being.

The RSD2 School Board Chair said,

“The story of the new Bethel-Hanberry School is a beautiful one of elevating the learning environment for all students, preserving a proud heritage, and knowing we made an excellent investment in our children’s futures. I hope other school districts will see what is possible in education design, and the consequential effects facilities can have for students, teachers, and entire communities.”



DOWNLOAD THE BETHEL-HANBERRY ELEMENTARY SCHOOL CASE STUDY

**“Awe is the
beginning of
wisdom.”**

- Abraham Joshua Heschel

