



Shared Learning at the Forest Edge

1. EXECUTIVE SUMMARY

Captain Johnston Blakely Elementary School serves the children and families of South Bainbridge Island, a community treasured for its beautiful, rural environment of northwest forest and Puget Sound shoreline.

A replacement of the existing 1965 single-story concrete block school, the new Blakely Elementary School building advances the Bainbridge Island School District's (BISD) learning objectives by providing improved indoor-outdoor learning and play spaces, enhanced STEM facilities and meeting sustainability goals for energy, daylighting and healthy materials. The new facility embraces the District's standards for "strongly held community values, a history of educational support, focused on 21st Century student learning, sustainability, energy efficiency, longevity, flexibility and community use," while cultivating the unique culture of Blakely.

The educational program at Blakely empowers children in Pre-K through 4th grade to become lifelong learners in a global society. Alongside extraordinary academics, Blakely embodies a culture of kindness, respect and creativity that is nurtured by a strong community of faculty, staff, volunteers, parents and kids.

Puget Sound

Bainbridge Island

Seattle

 Captain Johnston Blakely Elementary School Bainbridge Island School District

2. SCOPE OF WORK & BUDGET

Existing Facility Condition

Significant concerns for the existing 1960s-era 43,505 sf single-story building included a lack of fire sprinkler system throughout the building; inadequate accessibility; outdated interior finishes; and mechanical, plumbing, and electrical systems beyond their useful lifespan. The school's double-loaded corridors did faciltate collaborative shared learning experience. In addition, critical pedestrian, bus and vehicular conflicts resulted in daily safety issues.

New Blakely Elementary School

Funded by the successful capital bond p Bainbridge Island community in 2016, th Blakely facility provides an enhanced lec for 450 students, with the ability to expa in the future. The new 68,000 sf school (in Fall 2019 and serves Pre-K through 4th learning spaces including 20 classrooms. rooms for art and STEM instruction, gyrr cafeteria and commons space with adjc and a range of special education resource

Blakely Elementary School by the Numbers—

Building Area: 68,000 sf Occupancy Date: 09.06.2019 Project Cost: \$44.4 M

Grades: Pre-K (one class), K (three cla Enrollment: 450 students, with the ab Shared Amenities: Gymnasium, multi

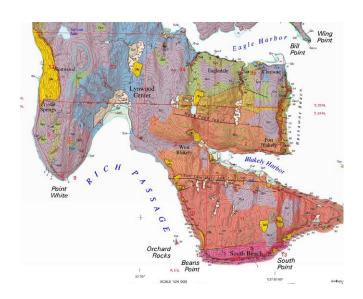
Square Feet per Pupil: 151 sf/student



Community Context & Assets



2002 Extent of Vashon Puget Lobe of the Cordilleran Ice Sheet. Bainbridge highlighted. (Kovanen & Easterbrook)



Ecological Setting—Macro to Micro

Formed by Ice

Bainbridge Island and Puget Soud were formed by the last ice age, about 15,000 years ago, when the 3,000-foot-thick Vashon Glacier advanced and retreated through the area.

Lowland

The Central Puget Lowland is the heart of the Puget Sound both in natural and human terms. It is composed of undulating hills, or drift plains, that are heavily urbanized in the east and more rural and forested in the west. Well-drained, gravelly soils are common and exhibit limited moisture holding capacity and low agricultural productivity.

A School in Forest Landscape

Bainbridge Island landscapes are comprised of mixed coniferous species such as Western Hemlock, Red Cedar, Douglas Fir, Red Alder and Big Leaf Maple. Common understory plants are Oregon Grape, Salal and Sword Fern. These heavily forested regional landscapes feature lakes, wetlands and small sinuous stream and riparian areas.

Local Watershed

Blakely Elementary is primarily located in the Pleasant Beach Watershed, an aquifer recharge area, with a small portion of the site located in the Eagledale Watershed. Annual rainfall is approximately 52 inches of rain per year. Site soils identified as Vashon Till are composed of glacial drift deposits made up of sand, small round pebbles, gravel and silt.

Blakely Site Conditions

The 12-acre site is located within OSR-.4, Open Space Residential zone. It is within a Critical Overlay District, which generally has to do with aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas and wetlands. The site is upstream of wetland areas on the neighboring IslandWood Environmental Education Center site, within an aquifer recharge area.



The design of Blakely evokes the South Bainbridge Island Community past, present, and future.

Community History

The school is located on the ancestral homelands of the Coast Salish people. By the late 1800s, Port Blakely boasted the worlds largest sawmill. Mill workers came from many nations. Japanese, Pacific Islanders and Suquamish communities were in the surrounding area. Many Filipinos emigrated to Bainbridge Island during the 1920s; others came as shipyard workers during World War II. The waters surrounding the island attracted Croatian fisherman who settled an area called Ichville, now called Eagledale.

Community Today

Since the 1960s, Bainbridge Island has increasingly become a bedroom community of Seattle, a 35-minute ride away on the Washington State Ferries. The community is strongly dedicated to preserving green space and carefully controlling development, both residential and commercial. The Bainbridge Island Land Trust, city and park district are instrumental in maintaining island open space.



Vision and Character

Educational Programming

A collaborative Educational Specification process including key participants captured the goals, functions, sizes, and relationships for the programs, spaces and activities for the new Blakely elementary school. As part of the process, school and community stakeholders identified the many special spaces that foster learning and build community within the existing 1960s era facility, multiple hearts that nurture the life of the school community. These included:

- The library: consistently mentioned as a critical space, not only for learning, but also for instilling a sense of school identity for generations of children.
- The office: functions as a community building space for staff and faculty, but also as a place where parents interact with school personnel.
- The forest setting: a beloved resource and characterdefining feature for the school. The campus trees provide shelter/shade, connect kids with nature, reinforce a sense of scale for the large play area, and support specific lessons for some classes.

It was important for the new school to preserve the characteristics that make these hearts so special—the camaraderie, culture and discovery—while re-imagining the spaces themselves. As part of the collaborative process, emerged a collective hope for the new Blakely Elementary School to symbolize the values of the South Bainbridge Community, be a healthy and sustainable outgrowth of the beautiful landscape, and enable meaningful learning experiences for generations of Bainbridge Island's children.



School & Community Stakeholders

BISD School Board

Mev Hoberg, Board President Sheila Jakubik, Board Vice President Mike Spence, Board Director Lynn Smith, Board Director Tim Kinkead, Board Director

Blakely Education Specification Committee

Amanda Gardner, Parent
Carrie Morgan, Small Works Project Coordinator
John Gray, Capital Projects Manager
Karen Keller, Blakely Teacher
Karin Knight, Counselor
Kathleen Pool, Blakely Teacher / Librarian
Kathleen Watt, Parent
Kyanne Hawkins, Blakely Administration
Lisa McCassey, Blakely Teacher
Maureen Wilson, Blakely Teacher
Reese Ande, Blakely Principal
Tamela VanWinkle, Capital Projects Director
Teresa Ball, Blakely Teacher
Terra Claiborne, Blakely Teacher

3. SCHOOL & COMMUNITY ENGAGEMENT

Understanding Priorities and Constraints

From the onset of the design process, an interplay between the project size, budget, and quality of work and materials has existed. (See graphic diagrams below.) These themes were a framework throughout the programming phase to develop Educational Specifications that guided the design process and provided a critical touchstone for assessing options and alternatives for the new Blakely.

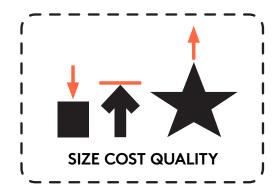
Spectrums Exercise

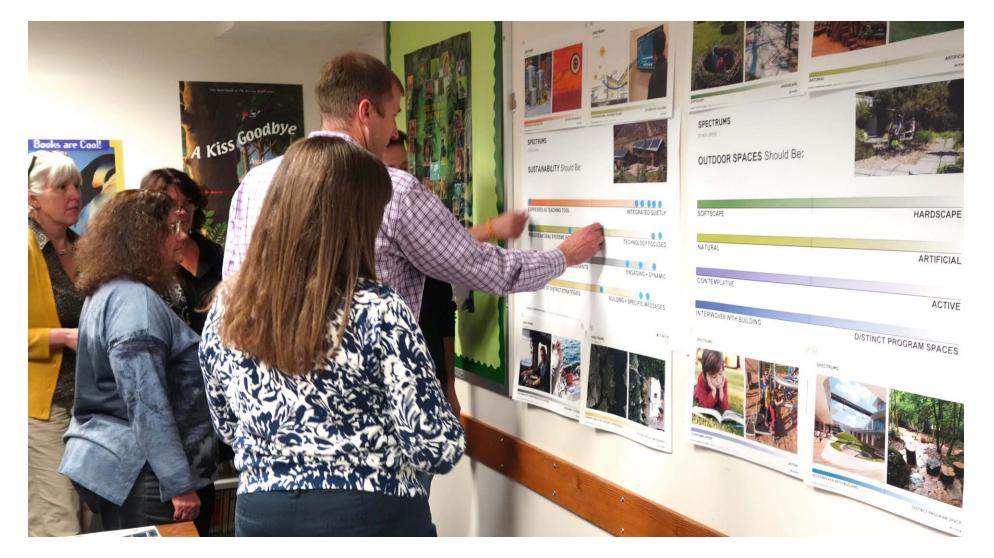
As part of the programming process, a series of spectrum exercises explored dichotomies of numerous topics in order to understand important values and priorities for Blakely. For each topic, workshop participants were asked to place a dot on the portion of the spectrum that best corresponded to Blakely moving into the future. The excerpted responses shown at right provide data points as an important gauge for the next phases of design.





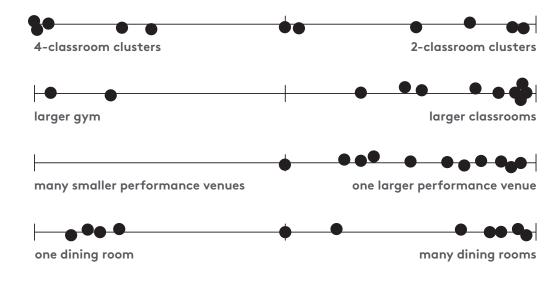




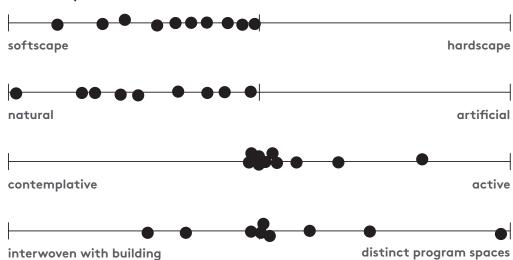


The Campus Should Be: intimate open fewer larger-group spaces more smaller-group spaces horizontal connectivity vertical connectivity 'teacher family'-focused 'student family'-focused

Blakely's Program Values Are:



Outdoor Spaces Should Be:



3. SCHOOL & COMMUNITY ENGAGEMENT



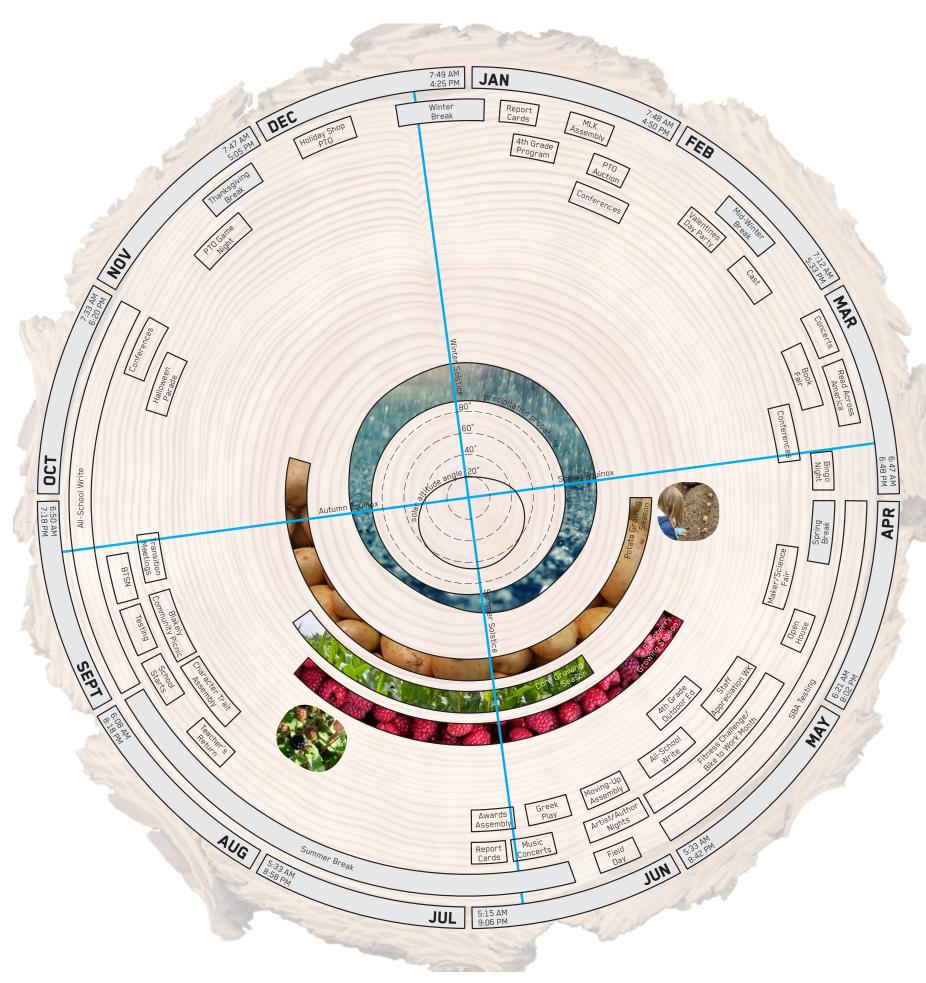
The beloved sunken reading room space in the existing Blakely library—utilized during design workshops—is reimagined in the school's new library design.

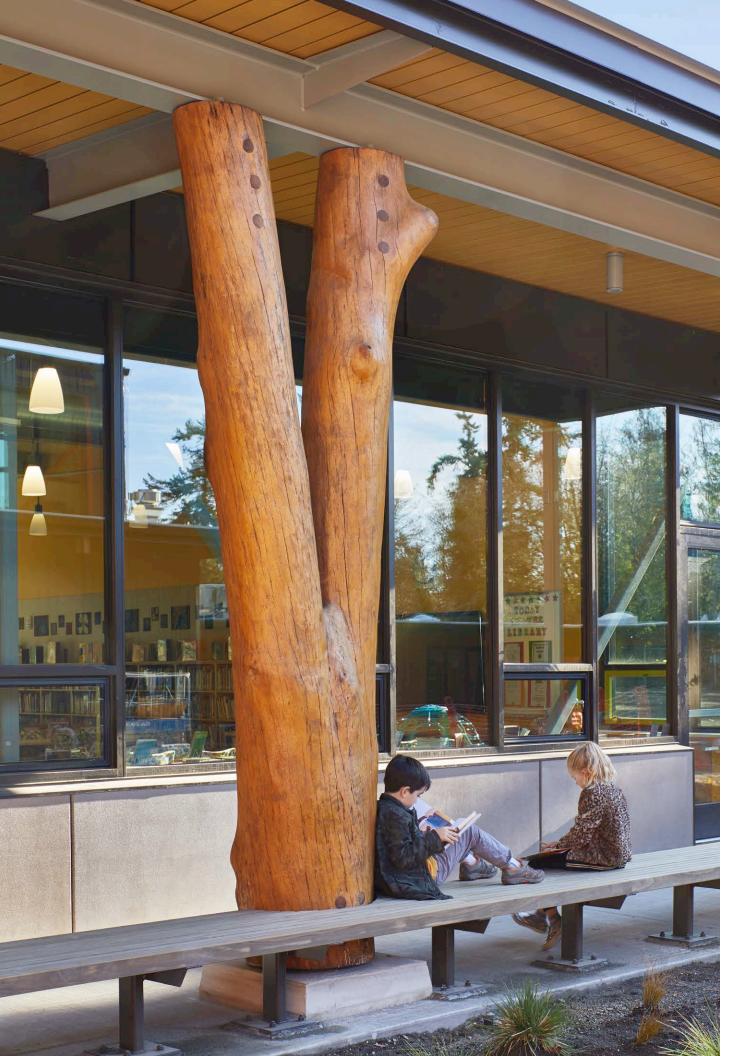
Design Exercises

As part of the integrated process, the *Day in the Year, Year in the Life* exercise explored the schedule of the school throughout a typical day, and throughout a typical year. A graphic summary of the exercise is shown at right. Along with schedule complexities, commentary is integrated from the students' perspective to give an understanding of potential effects of the schedule on students.

This exercise helped identify program elements that were critical to the project delivery schedule, as well as schedule elements that are being driven by the available space within the school. For instance, the lack of a lunch room governs the multi-tiered, complex sequence of in-classroom lunches, a structure that is time-intensive.

The Year in the Life portion of this exercise depicts activities of the Blakely schedule that occur annually. The exercise also shows changes in season, sunset/sunrise times and other influential environmental factors.





4. EDUCATIONAL ENVIRONMENT

Vision

The Bainbridge Island School
District is committed to providing
each student with an excellent
academic program in an engaging
and supportive environment that
fosters a passion for learning,
instills a sense of civic and social
responsibility, and develops the
intellectual, physical, and social
skills necessary for success in
career, college, and life in the 21st
century.

-Bainbridge Island School District Vision

In the Blakely School Community we believe each student should be actively engaged in the pursuit of academic excellence. Staff, parents and community work collaboratively to nurture and challenge each student to achieve their greatest potential and become active contributors in a global society. We appreciate and respect individual differences, and honor creativity and kindness.

-Blakely Elementary School Vision

Guiding Principles

The Guiding Principles describe the learning environments in Bainbridge Island School District that are required to foster every student's ability to develop the knowledge, skills, and attributes that are necessary for success in the 21st century.

"Strong Minds"

- Challenging & Meaningful Curriculum
- High Expectations & Quality Instruction
- "Strong Hearts"
- Interconnected Learning Experiences
- Personalization & Individual Attention

"Strong Community"

- Student Engagement & Leadership
- Caring & Supportive Environment

Programmatic Goals

The following priorities for school-wide relationships, both indoors and outdoors guided the design development.

- Welcoming arrival for main entry; gym and commons access after hours
- Library as a special place
- Integration of landscape
- Inviting people to walk in and feel drawn to the outdoor elements
- Views outside and landscape corridor with library at the terminus of the central spine
- Separation of bus circulation and parking
- Common point of entry for bus and car arrivals
- A playground close to the entry for family socializing at dropoff and pickup times



Four key design and educational goals emerged from workshops and conversations with the Blakely Education Specification Committee:

Foster Next Generation Learning

- Respect, honor, and extend traditional and innovative learning opportunities—exploration driven by curiosity, discovery inspired by play, and creativity and productivity enhanced by technology
- Support the quest for knowledge and discovery
- Celebrate and express the learning process through the built environment
- Emphasize the importance of play
- Inspire engagement in academic excellence

Enhance Connectivity, Safety and Flow

- Allow access to the surrounding natural environment and nature-based play
- Create a safe place for all types of learners, educators and staff
- Configure effective pathways for students, parents and service to optimize efficiency and safety
- Employ balanced visual transparency to promote interconnection and safety
- Optimize layered functionality and accommodation of large and small group activities
- Design a facility to capture time and allow for educational innovation

Strengthen Community

- Celebrate and strengthen the Blakely School culture and larger Bainbridge Island community
- Create flexibility and adaptability to support evolving pedagogical and program needs
- Accommodate expansion and convey wholeness regardless of enrollment
- Invite community partnerships
- Provide a welcoming place for parents and community users

Create a Healthy Environment for Learning

- Invite natural light into places of learning
- Integrate sustainability with the learning process
- Promote wellness and enhance learning through healthy materials and building systems
- Prioritize acoustic comfort and performance
- Design for lifetime maintenance commensurate with district resources

Supporting Diverse Learning & Teaching Styles

Various types of spaces at Blakely foster innovative learning techniques and activities.









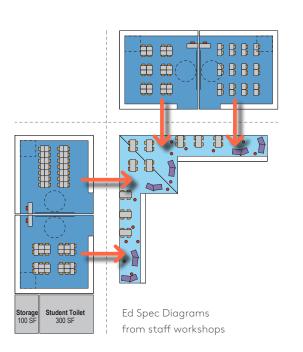


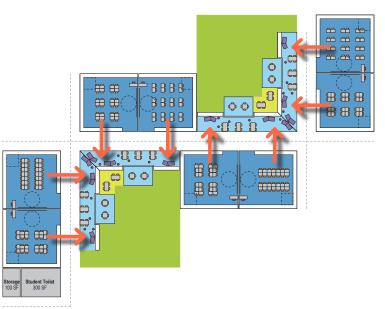














"The shared learning space is a game changer. Better than I ever could have imagined! It allows so many creative possibilities with individual students, groups, classes or even whole grade levels!"

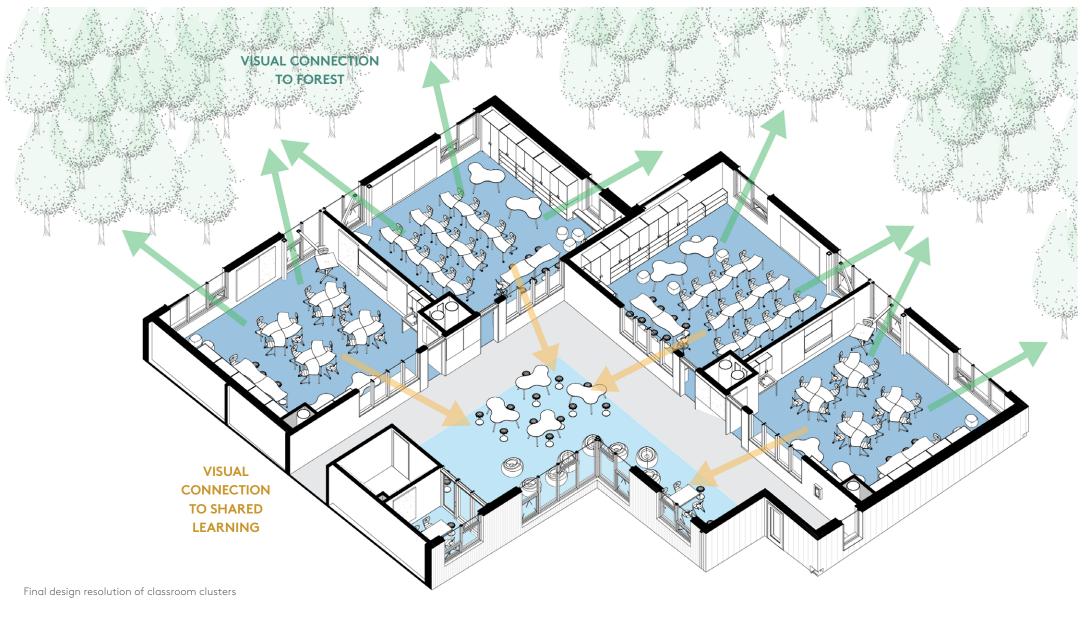
Teresa Ball Blakely School Teache

4. EDUCATIONAL ENVIRONMENT

Learning Cluster Development

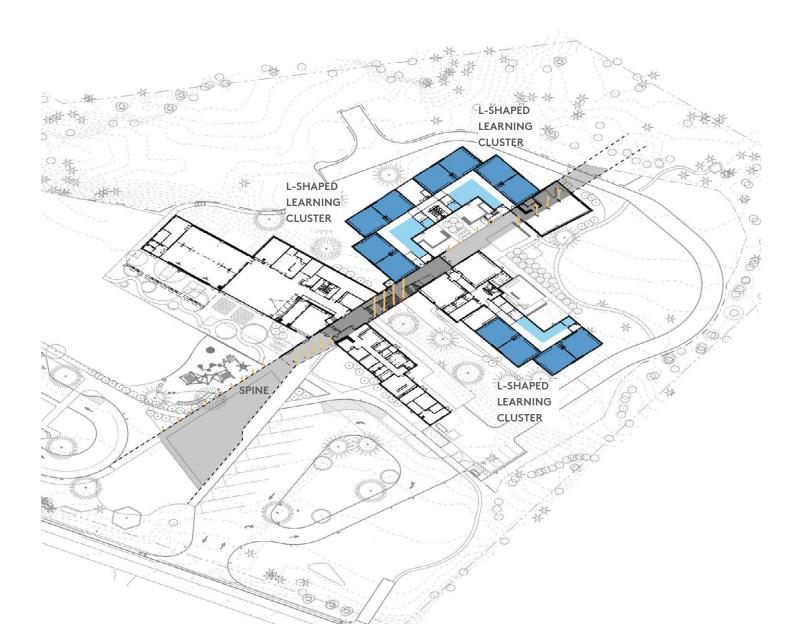
Innovative L-shaped clusters folds four classrooms around each shared learning space. The arrangement provides teachers with clear sight lines to flexible learning environments that support individual, small group and large group activities. The L-shape provides equitable access and resources for the four surrounding classrooms. Views to the adjacent learning courtyard features small outdoor classrooms and larger, more rustic gathering spaces that immerse students in nature and quiet study, complimenting indoor classroom learning activities.

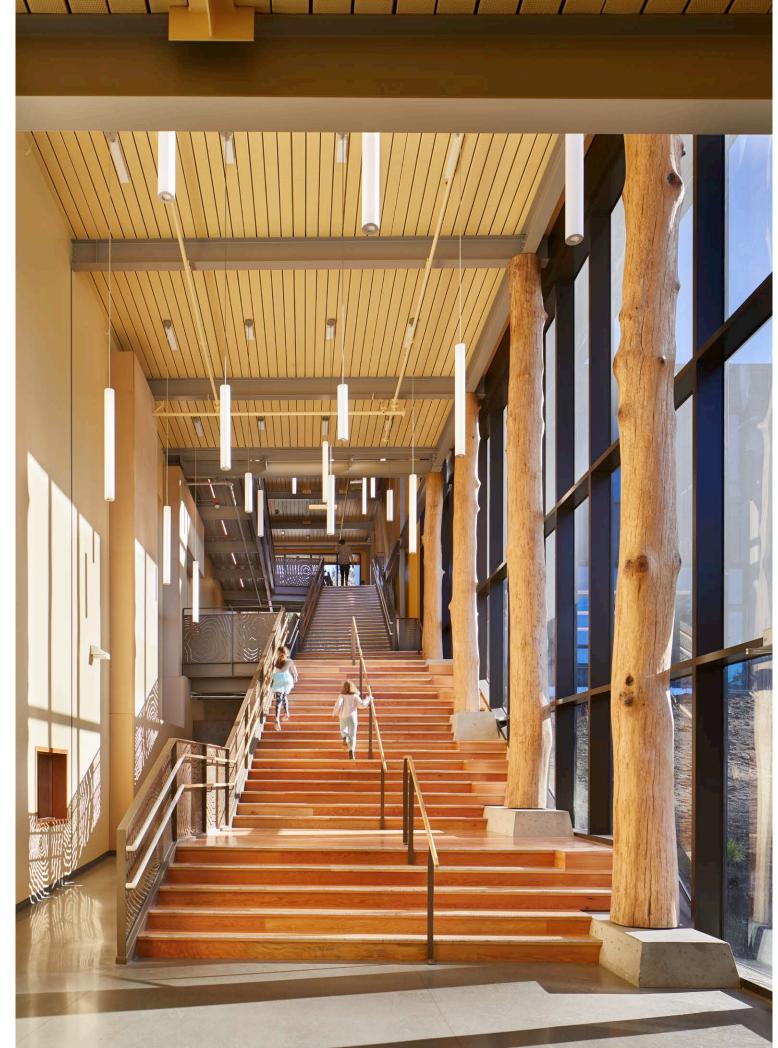
These programmatic diagrams show the design development of the L-shaped learning clusters and its advantages for educational flexibility.



The Heart of Blakely

The new school is organized around an east-west oriented spine that runs from the street to the forest edge. It is punctuated by a series of unmilled timber columns that mark the procession from reception to the library. The processional forest spine uses timber in many ways, from a cedar lined covered walkway, to a colonnade of natural tree columns, mass timber design of reception desk, library desk and reading nook. The laser cut steel guardrails flanking the spine are created with computationally derived tree ring geometry.







Inspirational-**Spaces**

NOVELTY EQUITY TIMELESS DAYLIGHT

The physical environment at Blakely is designed to inspire and cultivate discovery, inside and out. The following priorities emerged from the Ed Spec process:

- Design for the unexpected
- Incorporate elements of novelty, like the story pit from the original Blakely building
- Spaces for all students that inspire and create connections and equity
- Flexible and adaptable spaces that value each person, where they are and what they need for learning and
- Active spaces that encourage movement
- Outdoor and shared spaces with parents and community

- Space for parents and teachers to collaborate and socialize
- Quiet spaces for kids who need a break
- Nooks and crannies; Spaces for iPads or books at the windows
- Safety and security
- Spaces that invite collaboration
- Physical and emotional comfort, non-institutional feeling
- Tactile architectural elements, from columns to handrails



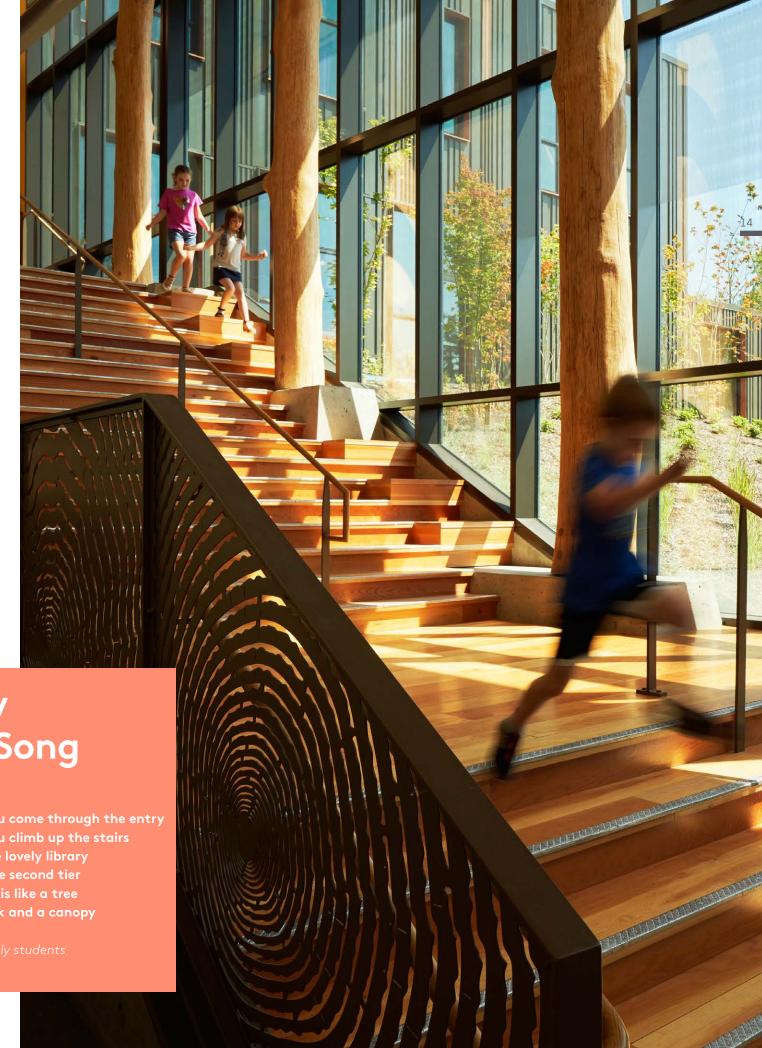


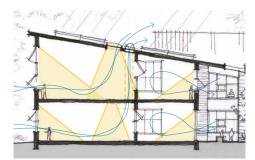


The New **Blakely Song**

Notice the trees as you come through the entry Notice the trees as you climb up the stairs Notice the trees in the lovely library Notice the trees on the second tier Our brand new school is like a tree With roots and a trunk and a canopy

<u>Click here</u> to view Blakely students





Daylight and Air



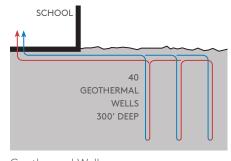
Forest 3D Scan



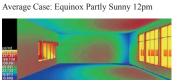
Bark and Lichen



Actual Tree Section



Geothermal Wells



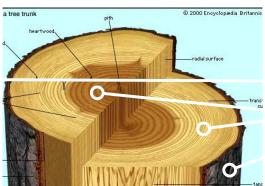
With Solatubes



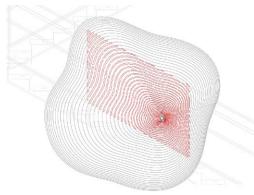
Digital Daylight Design



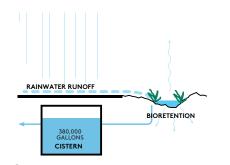
Trunk at the Shop



runk Section



Digital Abstraction



Stormwater



Daylight in the Library



Construction



Blakely Elementary



Completed Stair



Ferns

Anatomy of a Tree

ROOTS

Energy for the school's heating and cooling demand is cut in half by a heat pump system that is connected to a **geothermal well field** under the courtyard. These wells consist of loops of pipe that extend 300 feet underground circulating water that absorbs heat out of the ground in the winter and transfers back heat during the summer. Energy savings will pay back installation costs in under 10 years and provide long-term savings.

Rain gardens filter 91% of rainwater runoff by retaining water in soil and plants. These rain gardens overflow to subterranean cisterns that hold 380,000 gallons of water which is slowly released back into the watershed mimicking natural hydrology. The cleansing and retention of water on site promotes the health of Bainbridge Island watersheds and aquifers.

HEART

Biophilic design elements are interwoven throughout the new building. Its architecture stems from the geometry of the hill geology that intersects with the circulation spine. Windows frame views to the surrounding forest and hill. The Big Stair guard rails are inspired by tree rings, digitally abstracted and modified to ensure structural integrity once the pattern is laser-cut from steel panels.

The base of the outdoor play structure columns is designed as a fractally sculpted play element and complements the sinuous geometries of the play area.

BARK

The **building's skin** draws inspiration from the bark of the Douglas Fir. The vertically folded siding simulates the deep texture of the outer bark. The warm metal window trim colors echo the color of the inner bark. The cedar siding in the courtyard and front entry are the heartwood. Green operable windows evoke the brightly colored lichen and leaves found in Pacific Northwest forests.

The skin is also the **thermal protection** for the building and is wrapped in a mineral wool rigid blanket beneath the metal siding.

TRUNK

Tree columns provide structural support along the connective spine of the school. Living trees were laser scanned in a Wisconsin forest for the design team's analysis of shape, size and character. Scanning ensures that only selected trees need to be cut from the forest, optimizing sustainable forestry practice. Each tree was prepared and equipped in the shop to bolt into the rest of Blakely's steel frame, completing the structural system.

Seismic braces are expressed and colorful to celebrate the protective role of diagonal members in creating triangles that resist 'racking' of the building frame during an earthquake.

CANOPY

Rooftops and electrical infrastructure are designed for future **photovoltaics** that will generate renewable low carbon electricity on site from the sun.

Operable windows and ventilation shafts provide optional **natural ventilation.** Color changing sensors alert occupants for the best times to open windows and save energy. Classrooms have exhaust shafts with wind driven turbines to enhance airflow across the room.

Daylight harvesting is designed to illuminate every space in the school. Computer modeling informed locations of windows and skylights to optimize daylighting levels. Benefits include naturally varying light levels, increased student alertness and improved energy performance.

Integrated Landscape Experience

The new Blakely Elementary School includes a landscape program of a play/sports field, play equipment areas, a variety of outdoor learning spaces, as well as separated parent and bus zones.

Outdoor Learning Spaces

Outdoor play areas are designed to encourage exploratory play with extensive use of natural materials and forms. The surrounding site, which was previously lawn and pavement, is restored to a native forest condition with on-site stormwater management. Outdoor learning spaces are rustic in character, primarily composed of natural materials, with informal layouts. Opportunities for outdoor environmental and experiential learning are provided and learning is integral to the outdoor spaces, achieved by subtly embedding stories in paving, walls, or softscape. Connections between indoor and outdoor learning spaces are strong, with outdoor space covered for protection from the elements. STEAM curricula is integrated into outdoor spaces and paired with the indoor STEM lab and art spaces.

Outdoor Play Spaces

Outdoor play spaces at Blakely promote and accommodate physical and athletic activity, self-directed and safe nature play, and more traditional playground equipment. Playfields accommodate games such as soccer and become an asset to the community after hours. Playground equipment, such as the log boom play equipment—is composed of natural or naturalistic materials that engage a child's imagination and draw connections to the environment around them.

Environment as Teacher

The landscape at Blakely Elementary plays an important role in managing rainwater that falls on site in an environmentally sensitive manner. Best management practices like rain gardens are important teaching tools that embed the concept of stewardship into the building and landscape.











Sustainability

An increasing body of research shows important connections between sustainable, 'green' design and academic success. A healthy environment with daylight, nontoxic materials, fresh air, views, balanced acoustics, thermal comfort and access to nature is optimal for learning.

Sustainable Design Goals

BISD expressed interest in a sustainable design that is "at the forefront of the industry." It was important that the new elementary school demonstrate high performance, and serve as a healthy place to learn with low-emitting (or zero-emitting) materials, daylight, resource efficiency, and clear connection between sustainable design and educational opportunities.

Key design strategies for site, water, indoor environmental quality, daylight and energy are summarized on the following page.

Ecology

A healthy site is one of the most meaningful outward signs of a sustainable school. The redesigned site for Blakely grounds the school, creates a positive public image, and provides the setting for diverse activities that bring the community together.

- Soils and vegetation: Soil is a living ecosystem that nourishes plants, animals and humans. The site design features native plants appropriate to site conditions, minimizing necessary soil amendments and ongoing maintenance, and enabling the site to be as self-sustaining as possible, while supporting local fauna and student health. A good portion of the site's NE corner is within a wetland habitat buffer, and was converted from noisy sod-grass playfield to a quiet, restored forested landscape. This area is also in the tributary area of the wetland, so soil and planting improvements were made to improve water quality in this highly functioning wetland (on the adjacent IslandWood property).
- Ecology and health: The playground and outdoor learning environments encourage exploration and help make movement fun for different types of learners. Accessible walkways and trails, open areas and equipment options enable kids of all abilities to engage with nature, develop physical skills, interact with others and feel refreshed.
- Connection with nature: Studies show that connections with nature improve learning. Blakely's forested perimeter is a tremendous asset, and the new school incorporates ample opportunities to connect with nature. Most spaces are oriented to have direct visual connection to the forest. The layout also provides immediate access to the site for outdoor learning at classrooms, STEAM and gym.

- Learning garden: Community members, faculty members and kids expressed strong interest in developing a schoolyard garden or edible garden program. Raised planting beds are incorporated within the learning courtyard, and convert to bench seating outside the growing season.
- Community connections: The site is host to a variety of community activities during evenings, weekends and school breaks. These outdoor and indoor activities enliven the school and increase its service to south Island families, and strengthen Blakely's legacy as a sustaining element of the community.

Water

Water is one of the essential resources in sustaining life, yet we often treat it as an expendable commodity. Among ongoing threats to the health of the Puget Sound are toxic chemicals, polluted stormwater and loss of habitat.

The new Blakely Elementary School follows best practices and current, progressive regulations for water stewardship. Site strategies include on-site water detention, filter strips and rain gardens. In addition, the planting design limits the use of irrigation to the driest portion of the year following overall establishment. Building strategies include low-flow plumbing fixtures, water conserving appliances, and non-toxic maintenance practices. Finally, wherever feasible, strategies that protect water were implemented as tangible, visible, or immersive experiences, so that kids can learn about their connections to the larger ecosystem.

Indoor Environmental Quality

The indoor environmental quality of the new elementary school will be essential to the health and well-being of the people who occupy the spaces within it. Adequate post-construction flushing coupled with the use of low- and no-VOC content materials and non-toxic materials—both indoors and outdoors—will help ensure that kids are breathing fresh air and contacting healthy surfaces.

Daylight

Studies have repeatedly shown that natural daylight is associated with healthier students. Blakely is designed to minimize direct solar gain and glare while balancing available light throughout learning spaces. Tall windows bring light deep into spaces, and strategies including skylights and baffles frame views while harvesting beneficial natural light.

Energy

The school demonstrates wise use of energy, in part, by following district-wide standards, on-site renewable energy generation through a geo-thermal wellfield, LED-source lighting and integrated controls for daylight harvesting. The project is also solar ready. The visibility and expression of these building systems as teaching tools aim to inspire deeper curiosity and stewardship for the environment among students, staff and the greater community.

The building was designed for an EUI of 26 using geothermally connected heat pumps and a high performing exterior envelope. The project is solar-ready with conduit extending to the classroom roofs. Daylight autonomy is the goal for every space throught the school.





Above—STEM classroom indoor-outdoor connections
Below—Outdoor learning classroom with underground geothermal wells



6. RESULTS OF THE PROCESS & PROJECT

"Every square foot of our beautiful new library speaks volumes to those in it about how we as a community value books, reading and learning. It is as if the room says "come and read...." And the children do, in places I am not even sure the architects imagined.

When we think of our school as inspired by the forest, the library is certainly at the top with a full view of learning going on all around us while we curl up in "The Nest" to share a story. It is a very natural place to listen, to use the imagination and to wonder."

Kathleen Pool Library Media Specialist, BISD

Dear Workers I thank
you so much for
Bilding this fabulous
School and our
fubulous Playgrand to,
and doing all the
hard work and
Planting all the
Plantis tor this
fubulous school
from Laynee





