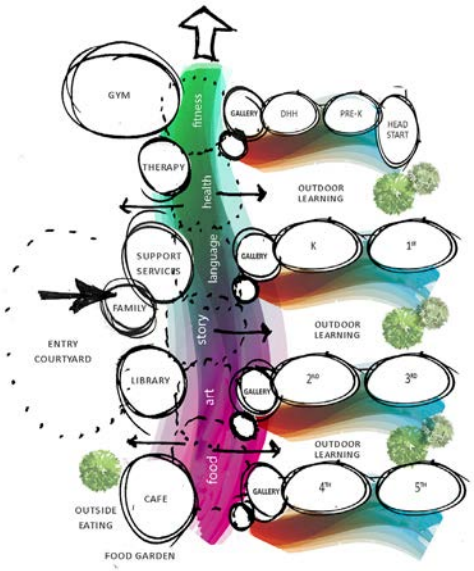
BIRNEY ELEMENTARY SCHOOL

Executive Summary

The new Birney Elementary School is a community center for learning which reimagines how to meet the needs of a diverse neighborhood by serving as a marketplace of resources with inclusive and collaborative core learning areas. The school has been home to a regional Deaf and Hard of Hearing program since 1962, serving preschool and elementary from 14 school districts. The new design accommodates up to 500 students, making it one of the larger schools in the district with some of the most specialized needs. Birney's population includes 74% students of color with over 20 native languages spoken and 23% of students learning the English language. 80% of students are from low-income families with 10% experiencing homelessness and the challenges that come with it.

In the spirit of Alice Birney, who founded the National Parent Teacher Association (PTA), the new school is designed around a culture of family inclusivity and support. The new design was informed by research showing that choice, play and a strong support network around students strengthens the social and emotional skills critical to persevering through the challenges life can bring.



Student Demographics

American Indian/Alaskan Native	0.2%
Asian	10.2%
Black/African American	14.2%
Hispanic/Latino of any race(s)	26.1%
Native Hawaiian/Other Pacific Islander	8.5%
Two or More Races	14.7%
White	26.1%

Scope of Work and Budget

Number of Students: 500

Total Gross Square Feet: 55,300 s.f.

Site + Building Construction Cost: $29,500,000

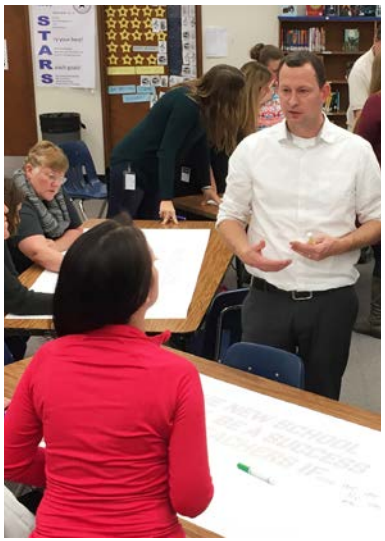
Predicted EUI: 21.4

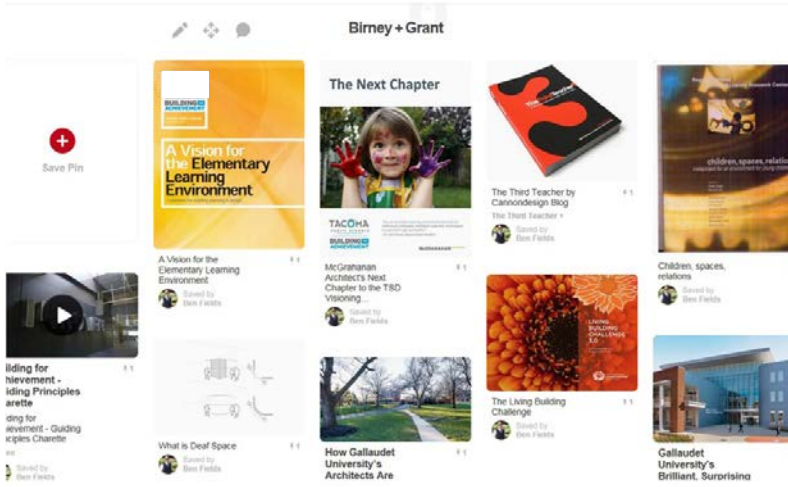
Construction: May 2019 - November 2020

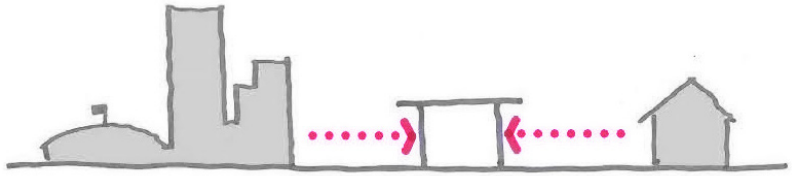
Inclusive Stakeholder Activities

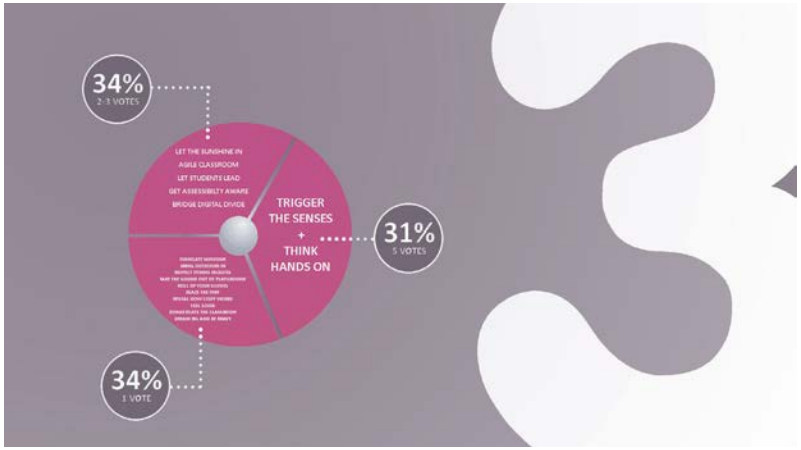
School & Community Research and/or Engagement

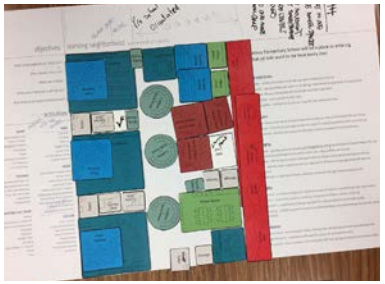
The design process engaged students and staff from both deaf and hearing communities. A passionate advisory committee with parents, teachers, and administrators participated. Several community partners also participated, including TPS office of community partnership, the local children's museum, the University of Washington, DHH State education leaders and neighborhood residents. The design team set up maker-booths and feedback opportunities at school events to engage families where they were rather than hold separate meetings. The process was guided by the District's Vision for the Elementary Learning Environment which focused on the kinds of relationships that should be supported with the challenge of creating innovative learning environments around five key modalities: Discover, Create, Think, Impart and Exchange. Students learned about design and construction in monthly meetings with contractors and through pen pal letters with architects.











JOURNALS & HOMEWORK

WHY IT MATTERS

Engagement and critical thinking are key to effective design discussions.

What we did

We created a personalized journal for each Design Advisory Committee (DAC) member to bring to meetings, take notes, store handouts and maintain project info. This enabled both the designers and members of the committee to organize their thoughts, concerns, and write down questions for future meetings.

ASSET MAPPING

WHY IT MATTERS

Strong communities make strong students.

What we did

In small groups, we mapped the organizations and amenities around the school and created one master map using everyone's input. We then discussed what partnerships were most desirable and what was missing that the school might be able to provide.

LISTENING TO STUDENTS + PARENTS

WHY IT MATTERS

Gaining the perspectives of students and parents allowed us the opportunity to gain a more complete picture of needs, opinions and inspiration within the overall community and therefore consider a view of the larger impacts of our design.

What we did

We brought glue, scissors, markers and crayons to a makerspace booth in the school gym. As parents and students wrote down their thoughts, we took the opportunity to ask them about their ideas.

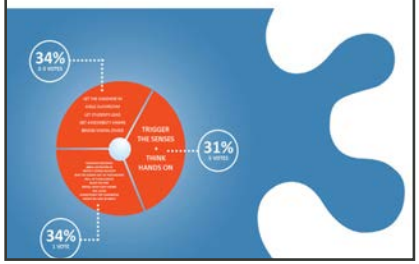
THIRD TEACHER

WHY IT MATTERS

There are many dimensions to the richness of opportunities a new school can provide.

What we did

The district provided a copy of the innovative book 'The Third Teacher' to each committee member. We asked each member to share three concepts that resonated most with them. From there, we discussed why these concepts were so impactful and how they could translate into the functionality of future learning spaces.



BEST INSTRUCTIONAL PRACTICES CHARRETTE

WHY IT MATTERS

Collaborative processes result in better school designs.

What we did

We attended an all-day workshop with approximately 60 people to openly discuss current projects, trends, goals and strategies with committee members, district staff and architects using the writable surfaces on our tables.

ESSENTIAL QUESTIONS + DEFINING SUCCESS

WHY IT MATTERS

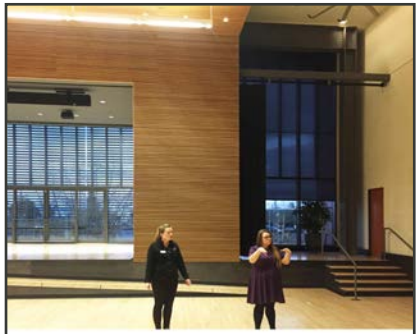
Meaningful design starts with essential questions.

What we did

In small groups, we brainstormed questions that will serve as the foundation for our future discussions. We shared with the larger group and voted which ones were most important. The question with the most votes was crafted into our essential question:

How do we create a space so enticing that kids want to be here every day? We used what we call a 'graffiti write' (writing ideas on large pieces of paper), to understand what success looks like for each user group – students, families, teachers and community.

How do we create a place
so enticing
that all kids want to be here
every day?



CROSS POLLINATION AT STAR CENTER

WHY IT MATTERS

Convergence of the DAC committees and sharing of ideas served to challenge our individual opinions and spark our imaginations.

What we did

At a joint meeting of the Birney and Grant DAC members we listed six possible approaches to engage with the learning environment: move, play, eat, make, perform and pursuing wellness. In small groups, we brainstormed various activities and amenities that would support these approaches. We then shared the benefits of each idea with the larger group.

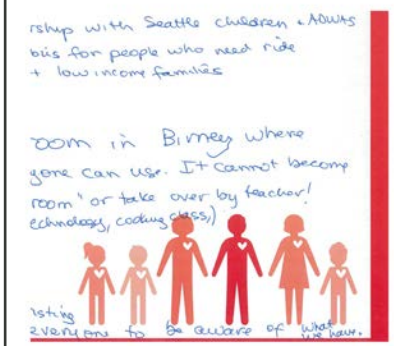
ENGAGING FAMILIES: CHALLENGES AND WHAT IF'S

WHY IT MATTERS

Family engagement is a critical part of student success.

What we did

The group shared what they felt were obstacles to fully engaging families. We wrote these on large sheets of paper and posed the question, "What If?", encouraging the group to envision solutions to these difficulties.



DEAF SPACE DESIGN

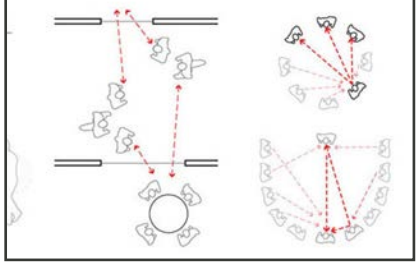
WHY IT MATTERS

Understanding the unique needs and aspirations of the deaf and hard of hearing community is critical to providing equal access and a sense of belonging.

What we did

Sitting in a semi-circle as a group- so that everyone can see each other equally- we asked the following questions:

What motivates you? What do you want to learn and what would you like to contribute to the process? What does success look like for students, teachers, families and community?



LEARNING ACTIVITIES

WHY IT MATTERS

Each child is unique and they learn in different ways. Learning activities and the settings that support them should address the diverse ways students grow and thrive.

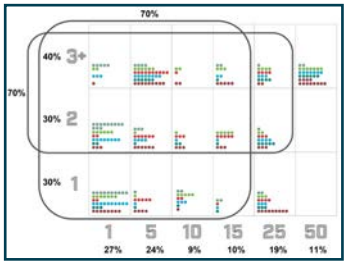
What we did

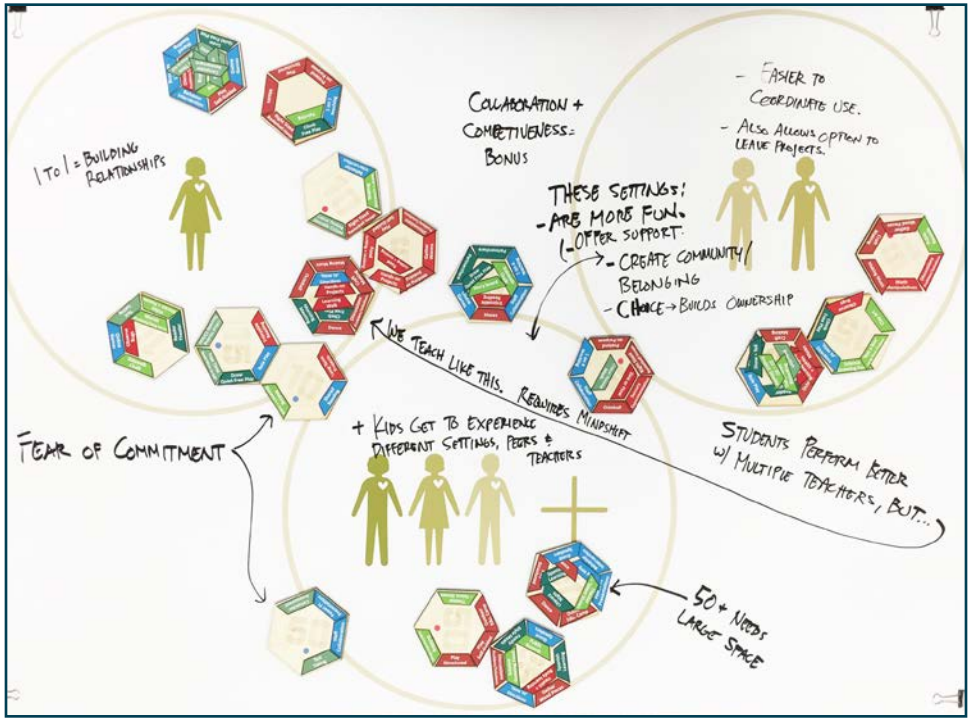
Using the five learning modalities from the Visioning Document (think, create, impart, discover, exchange) as a foundation, we discussed and documented learning activities teachers currently engage with their students. We added "brainstorm" to explore other possible learning modalities within the existing school.

UNIVERSITY of WASHINGTON

Sense of Belonging: Student Mapping Workshop

Dr. Kelley, with UW Tacoma, centers his work on the use of participatory and geospatial methods to generate new forms of data about space. He involves students in action-oriented community-based projects in matters of equity and access, with a strong focus on the inclusion of youth voice. During predesign Dr. Kelley conducted a mapping workshop with 120 fourth and fifth grade students. Students mapped answers to four questions: where you feel safe, happy, important and which spaces they would change. The data showed the majority of students felt the strongest sense of belonging in the areas that offered play and choice. Including more of this type of space became a design driver guiding our conversations during the design process.





TACOMA WHOLE CHILD INITIATIVE

New Methods of Teaching Activity Workshop

The Design Advisory Committee participated in a series of three focused workshops on pedagogy in order to define how space could support new methods of teaching. These new methods originated from a district wide change in teaching and learning with a focus on cultural competence and social emotional learning. They were restricted by the design of the existing school. Workshop 1: In one large group brainstorm the activities desired for each of the 5 learning modalities: Think, Create, Discover, Impart, Exchange. Workshop 2: Place actives on discs representing group size. Workshop 3: Place discs in circles representing the number of teachers co-teaching that activity. For workshops two and three, teachers worked in groups organized by student age for personalized data. The results showed 70% of learning needed space for co-teaching and/or small group work. This lead to a program revision for more diversity in space type and the concept of a learning neighborhood.

A Place for the Whole Child
Sharing Research with Stakeholders

PLAY

Emotional Health and Development

In the highly formative early stages of development, children tend to replicate and explore social norms during make believe and imaginative play. In acting out various roles and situations, "private speech" develops, which is the narration of events that children speak aloud when playing. This type of speech and play aid in emotion-regulation and navigation of social situations, while also helping in negotiating challenging situations (Berk, Mann & Ogan, 2006). As children interact with more play partners, their self-directed speech begins to incorporate more perspectives, thus enhancing their awareness of others' viewpoints. Sustaining imaginative and exploratory play allows children to practice perspective-taking and thus, encourages a sense of empathy and caring for others.

"In play the child is always behaving beyond his age, above his usual everyday behavior; in play (s)he is, as it were, a head above himself. Play contains in a concentrated form, as in the focus of a magnifying glass, all developmental tendencies; it is as if the child tries to jump above his usual level. The relationship of play to development should be compared to the relationship between instruction and development... Play is a source of development and creates the zone of proximal development" (Bodrova, 2008).

SOCIAL SUPPORT

People, Resources and Collaboration

Social support is the feeling of being accepted, cared for and part of a social system that can be thought of in four categories: emotional, informational, appraisal and instrumental (Heinrich & Gullone, 2006). It has been observed that having meaningful social networks serves as a protective factor against stressful life events and physical ailments. According to Seppala, Rossomando and Doty (2013), "the perception of being connected changes one's cognitive interpretation of stress. Knowing that others (even just one person) will provide support has the effect of buffering one against stress by changing the appraisal of a situation formerly perceived as stressful."

The intention behind carving out these spaces is to enhance communication between all the spheres of a student's life. The hope is to have sustained dialogue between the school and home to support the healthy development of the student. Increasing social support and strengthening a student's network seeks to aid in the success of the individual.

CHOICE

Enhancing Intrinsic Motivation

When a student is given the opportunity to choose, they are enabled to engage in self-directed activities, which allows them to set goals that are personally important. Consequently, they become intrinsically motivated to achieve these goals. In other words, instead of performing in pursuit of reward, they are able to engage in the learning process for the sake of self-fulfillment (Evans & Boucher, 2015) In a learning environment, intrinsic motivation is more stable and resilient than extrinsic motivation for the fact that external rewards (grades) do not determine interest level.

Choice is powerful. When a wide variety of choices are offered in a structured manner, a students' sense of autonomy is supported. In providing diverse learning opportunities, students have the freedom to delve into their interests and strengthen their learning skills. Evans & Boucher (2015) observed how choice can be a powerful mechanism within the frameworks of self-determination theory (SDT). According to SDT, choices should fulfill the needs for: competence, relatedness and autonomy. Competence is defined as providing choices that meet the ability level of a student to avoid disengagement due to being overwhelmed by the task at hand (Evans & Boucher, 2015). Relatedness includes providing choices that are personally meaningful. The need for autonomy is closely linked with relatedness as it comes from feeling the freedom to choose what is most relevant to one's interests (Evans & Boucher, 2015).

NETWORKS

Engagement and Collaboration

Opportunities for teacher collaboration have been shown to indirectly impact student achievement. In providing opportunities for collaboration and discussion, we are aiming to sustain a culture of idea exchange and advancement (Moolenaar, Sleegers & Daly, 2010).

Providing spaces for teachers to interact socially allows for opportunities to create stronger, more well-connected teacher networks. A strong community of teachers means a strong community of learners.

Stakeholder Goals

Planning Process and Project Results

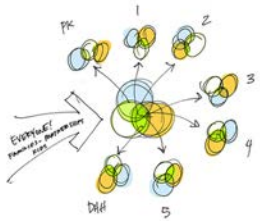
INCLUSIVE

Social / Emotional

A diversity of space types to inspire students and cultivate a strong network within the learning community to better meet the variety of daily needs and experiences.

Multicultural

Celebrate and reflect the rich diversity of cultures in the learning community and integrate DeafSpace guidelines throughout the whole school.



ENGAGING

Students

Cultivate a sense of belonging and independence through an abundance of opportunities in the core learning areas and throughout the school to think, create, impart, exchange, play, move, perform, and discover.

Families & Community Partners

A coffeehouse like area for families to access resources, classes and connect with community partners for wrap around support.

Staff

Flexibility for different teaching styles along with areas for collaboration and well-being.

HEALTHY

Movement

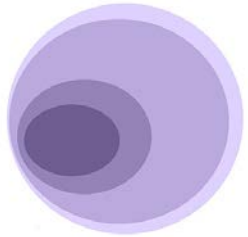
An awesome playground, natural play areas and indoor or covered fitness/play opportunities.

Nutrition

Make healthy eating available and fun for kids by connecting the kitchen and dining commons to a garden and food lab for hands-on learning.

Environmental Stewardship

Opportunities for students and families to learn about sustainable design and the health benefits connecting the built and natural environments.



EXPLORATORY

Discover Nature

Easy and usable outdoor learning areas with pathways and landscape learning zones.

Engage the Senses

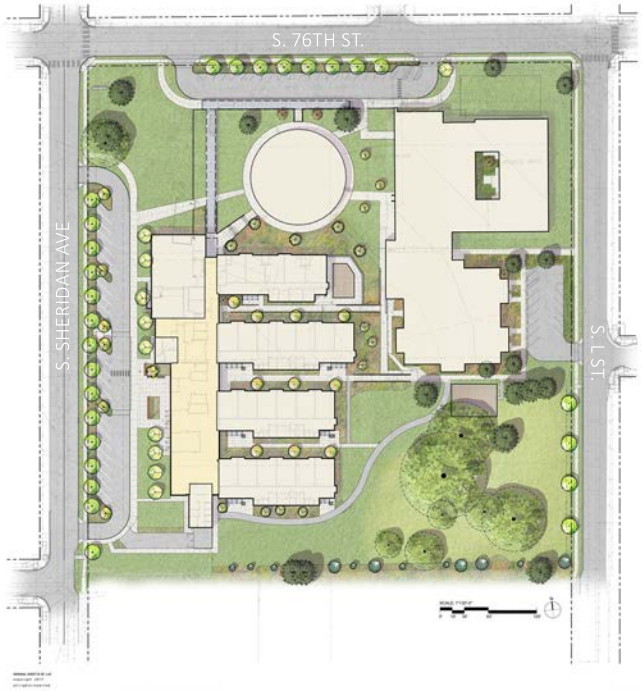
Makerspaces with areas for science, art, and experimentation.

Spark Curiosity

Views into areas of the building that offer learning opportunities but are normally hidden.

Learning Marketplace + Neighborhoods
Educational Environment Design

The building is organized into two main areas. On the west, a Learning Marketplace reorients the entry to face the primary street. This communal zone employs a casual atmosphere to welcomes families, volunteers, and community partners to engage. Through a variety of approachable yet connected spaces, opportunities abound for supporting students, building relationships, and participating in the daily life of the school. On the east, the Learning Neighborhoods provide a collection of spaces to support of the five learning modalities. Choice and play are core aspects behind the design of these areas. Giving children choice offers the experience of self-directed learning in accord with their interests, motivating themselves from within. Play is the state where children feel safe to explore through imagination, creation and experimentation in ways that are fundamental to social emotional development. Students learned about design and construction in monthly meetings with contractors and through pen pal letters with architects.



The school entry now engages the neighborhood and the outdoor learning courtyards connect to the existing park-like space on the hill where the new play area is immersed into nature.

1. FAMILY CONNECTION CENTER
2. ADMINISTRATION
3. SPECIALIST TEAM ROOM
4. STAFF
5. MUSIC
6. GYM
7. RESOURCE ROOMS
8. PRE-K NEIGHBORHOOD
9. KINDERGARTEN NEIGHBORHOOD
10. K- 1ST GRADE DHH
11. 1ST GRADE NEIGHBORHOOD
12. 2ND GRADE NEIGHBORHOOD
13. 2ND- 3RD GRADE DHH
14. 3RD GRADE NEIGHBORHOOD
15. 4TH GRADE NEIGHBORHOOD
16. 4TH- 5TH DHH
17. 5TH GRADE NEIGHBORHOOD
18. SMALL GROUP ROOM
19. SPECIALIST FLEX ROOM
20. GENDER NEUTRAL TOILETS
21. KITCHEN
22. CAFÉ
23. STUDIO
24. LIBRARY

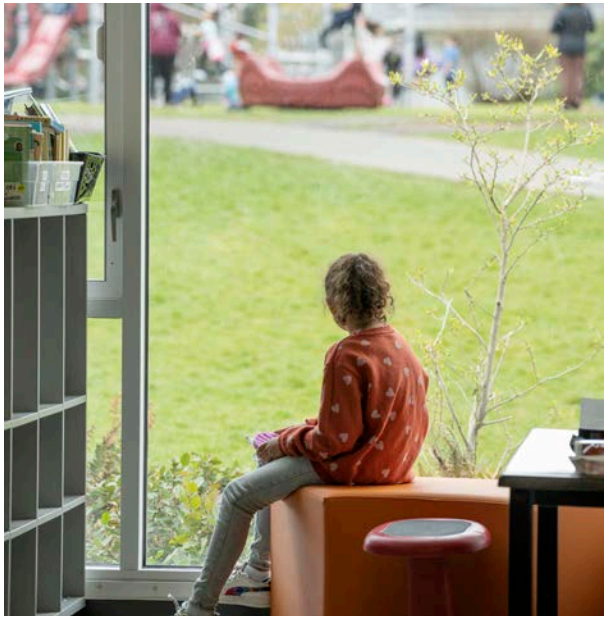
Learning Marketplace

Inspired by local farmers markets, the design connects the various school programs to a central circulation spine lined with student galleries, seating alcoves, and enticing views to both inside and outside spaces. Expanded learning opportunities are organized around six cross-cultural themes for daily use as well as intergenerational use after hours for cultural events and gatherings by the community. At the front of the school is a Family Connection Center that is a welcoming place for families to experience their children's learning environment and their teachers, engage with other parents and have access to community service providers.

A Family Connection Center greets you at the entry and is adjacent to the front office, library, counselors and family liaison offices.

The library includes a studio space for instruction and hands-on learning alongside an open area for all day access to technology, books and independent study space.

Community kitchen for extended learning, community programs and hands on learning opportunities for school hours.



Views to nature provide students reflective spaces to think and to practice self management and self regulation skills.

Student support teachers and para-educators work in small groups adjacent to classrooms. Less time transitioning provides staff more instructional time. Storage, sinks, move furniture and writable wall surfaces provide flexibility for learning activities.

Learning Neighborhood

Small learning communities of 3-4 north facing classrooms integrate the DHH and hearing students, improve teacher collaboration and provide opportunities for social emotional learning. In each neighborhood, student agency is supported beyond the classroom to include gender neutral restrooms, small group rooms, specialist rooms, and furniture settings for a diversity of activities in an open shared learning space which connects to an outdoor learning courtyard. Together these support the five learning modalities outlined in the district's vision.

Circulation spaces are key for providing a sense of safety and comfort for the DHH community. Unlike the hearing community, they listen with their eyes. This creates potential hazards in mobility if the built environment is not intuitive for navigation. Birney circulation is designed for abundant visual reach and articulated with rhymes of exposed wood structure and acoustic panels. View corridors are clear of visual barriers to key decision points for visual wayfinding. Transition spaces are marked with a change in color, scale and floor pattern. Interior transparency provides legibility as to whether a space is occupied or not as well as a connection to activities taking place. This creates an inviting sense of community for building relationships with friends you haven't met yet.

Each classroom includes a social emotional zone, used as a tool by the teacher for supporting students emotional regulation skills. This can be a positive reinforcement such as independent reading as well as a reflective space when emotions are running high and a student needs to cool off. In this situation it supports the school districts goal of closing the gap of disproportionate discipline by ethnicity. Rather than going to the principle's office students are now able to stay in class and practice self management independently

DeafSpace Design
Physical Environment Design

DeafSpace Patterns

Building on the groundbreaking work of Gallaudet University, the new design incorporates built environment patterns that are responsive to the sensory and social interactions researched and documented by the Deaf and Hard of Hearing community. An environment designed for their unique needs brings an improved sense of safety, inclusiveness, and equity.

SOCIAL

Eddies for talking in an area outside traffic flow.

Seeing and celebrating student work and the work of deaf role models.

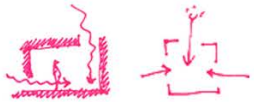
Round tables for groups smaller than four and chairs without arms.

Casual seating clusters at various heights provide good sightlines for signing.

Places to set things down to facilitate conversation.

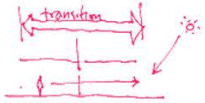
VISUAL

Reflected light deep into spaces. Avoid surface glare.



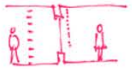
Wash surfaces with light. Provide multiple balanced sources. Avoid hotspots and backlighting.

Use color to provide background contrast and shape space.



Transition space between inside and out allows eyes to adjust to light conditions.

Dimable lights provide comfort and control.



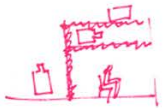
Flexibility in transparency for light and privacy control.

ACOUSTICS

Low reverberation time is needed for all students but is critical for those with hearing devices.

Vibration in specific areas to alert users of approaching person or gain someones attention.

Quality acoustic construction reduces background noise.



Isolate or dampen equipment noise and electromagnetic impulses.

Locate programs with adjacencies that don't create a background noise conflict.

MOBILITY

Muted reflective surfaces provide clues and visual awareness while moving.

Wide pathways and stairs. Doors in alcoves or swinging into rooms.

Shoulder zones for furniture or equipment supports ability to talk and walk at the same time.

Transparency at corners enables users to see oncoming traffic.

Use rhythm, color, texture or scale as clues that reflect transitions in program.

Transitions spaces marked with floor color or texture. Curbs to be eased or eliminated.

DeafSpace patterns are incorporated throughout all spaces in the school for an improved sense of belonging and equity for the DHH community.

Muted reflected surfaces provide clues and visual awareness that the DHH community rely on for understanding of their surroundings as they walk and talk down. Eddies for signing in an area outside of circulation flow. Places to set things down to facilitate ASL conversations. Advanced acoustic design provides low reverberation times, hvac sound dampening and electromagnetic isolation provide for those with hearing devices. Visual announcement systems in every space provide equal access to information. This is critical for safety drills but also supports participation in daily announcements. Tackable surfaces create student galleries where the school can see DHH student work and celebrating deaf role models.

Transparent corners replace the ability to hear a person walking approaching from around a blind corner for the DHH community. Casual seating clusters at various heights help to see hands that are signing.

Biophilic Design + the 2030 Challenge

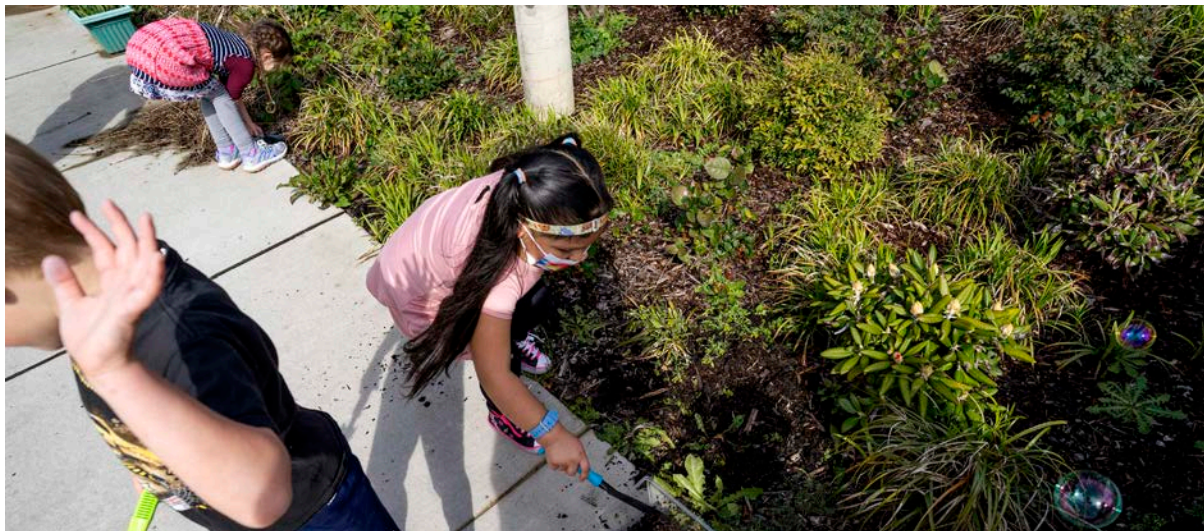
Sustainability and Wellness

Today's students spend less time outdoors than any generation prior, Many of those indoor hours are spent in classrooms and other school spaces yet research shows us that exposure to nature has a direct impact on children's well-being. The new Birney provides teachers an opportunity to bridge the gap between students and nature and improve student physical and mental health. The outdoor courtyards provide opportunities to learn about food, water, habitat and ecology. They support independent, small group and large group activities. They provide views for the facing classrooms and sustain a sense of discovery for all students as the landscape changes throughout the year.

Mental health is a large-scale challenge that is disproportionately lower in underserved communities. While architecture cannot solve it alone; we believe it can make a difference. Research into biophilic design has shown a positive impact on mental health, wellbeing and academic performance. Biophilic design principles employed at Birney include visual connection with nature, material connection, presence of water, dynamic and diffuse light, and awareness of natural processes like seasonal changes. These have been shown to reduces stress, enhance creativity and clarity of thought, improve well-being, and expedite healing for the occupants.

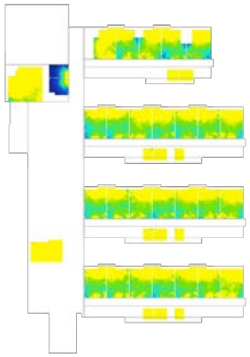
A good acoustical environment is essential where speech communication is an important part of the learning process. Control of background noise and reverberation in such spaces benefit students in early stages of language acquisition and persons with hearing difficulty, second language challenges, speech problems, attention deficit, or other learning disabilities.

The school is designed to meet the 2018 Washington Sustainable Schools Protocol and the AIA 2030 challenge with a predicted EUI of 21.40 kBtu/ft^2/yr. With a focus on acoustics, daylight, materials and energy, a multitude of sustainable elements provide benefits to the users, community, and region, including long term operational savings and reducing negative impacts on human health and the environment.



Acoustics

Birney serves a sensitive population of students. Therefore the entire school is designed to meet an enhanced level of acoustical performance, achieving WSSP improved acoustical performance criteria. An additional level of performance will be provided in DHH classrooms, audiology, SLP and specialist flex rooms.



Daylight

Daylight design takes into consideration the building's arrangement on the site, penetration of light, lighting levels, and glare control. The classroom wings were intentionally oriented east-west for sun control and reduce heat gain. The building proportions were kept to a narrow building footprint to maximize daylight penetration and classroom adjacencies to the exterior. Proximity to windows on the north side allows classrooms to receive comfortable, diffused daylight.

Timber

Mass timber components were chosen instead of steel due to wood's biophilic properties. Seeing the grain of wood reminds us of nature and of being in a forest which has been shown to reduce stress.

Wood is hypoallergenic and promotes good air quality. Sound is absorbed by wood through its innate acoustic properties and contributes to a peaceful environment.

71%

SAVINGS FROM BASELINE

Energy

The site-specific goal for the project is an EUI of 21.4, the design team, client and engineer worked collaboratively to analyze t15 alternates to reduce the EUI in Design Development from 23.5. The project was able to reach the 2030 goal with a predicted EUI of 21.4, resulting in a 71% savings from baseline. This analysis is based on an energy model using the software program ESVE 2017.