DISCOVERY HIGH SCHOOL

CAMAS SCHOOL DISTRICT | CAMAS, WASHINGTON

JAMES D. MACCONNELL AWARD 2021

We Learn for Life

Project-based learning (PBL) goes beyond secondary education and encourages students to become lifelong learners. It's more than standard curriculum in English, Math, and Social Studies. Project-based learning provides real-world benefits by offering students industry accreditation, leadership development, dual enrollment, peer-to-peer and student-to-teacher collaboration, and lab experience where theoretical practice is translated into practical application. These programs, which engage and connect students, are also redefining the way we design learning spaces.

Discovery High School is a new, ground-up facility delivering project-based learning to 9th through 12th grade students. The curriculum-based approach is new for the high school level in Camas School District, and a continuation of the program recently piloted at their project-based learning middle school. It centers on collaborative, integrated learning teams with a STEAM focus. Many parameters that typically define K-12 design are not in place as they would be in a new or replacement school to better accommodate curriculum delivery. The design is based on the educational model of project-based learning but can adapt to different educational delivery models for future flexibility. To conserve energy resources and promote student and staff wellness, sustainable design features include a focus on daylighting, natural cooling, and building systems.

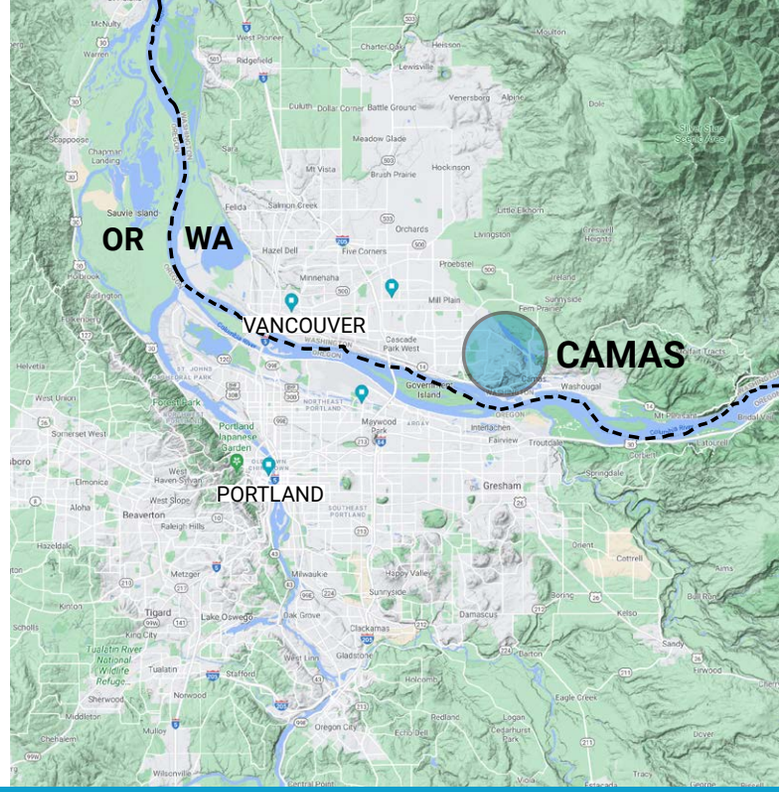
From the beginning stages of a project to the end-result, we are seeing a shift in how design teams can collaborate with clients to provide facilities that will meet the needs of an ever-changing student population. Discovery High School is designed to adapt to multiple learning scenarios, from project-based to traditional modalities, by providing a variety of spaces, mix of volumes, adjustable walls, and adaptive technologies. Flexibility and adaptability are a product of the collective understanding that throughout the life of the school building, project-based learning will continue to evolve and shift. Learning today (and the design of the spaces) will not look the same as tomorrow.

We are preparing students to be EPIC!

(entrepreneurs , producers , innovators, and contributors)

Owner: **Camas School District**
Location: **Camas, Washington**
Occupancy: **Sept. 2018**
Grades: **9-12**
Student Capacity: **800**
Building Area: **89,600 SF**
SF/Student: **112 SF**
Site Area: **40 Acres**
Construction Cost: **$34,272,000**
Building $/SF:**$327/sf**

Project Details



A Community Rooted in Discovery

Through inquiry and discovery, Camas has transformed itself from a paper mill town to a technological hub and incubator.

The Camas community was founded in 1883 (six years before Washington became a state in the Union) as the site of a new paper mill to supply paper for the Oregonian newspaper. Needing an abundant water supply, the mill was an ideal location, with water furnished by the nearby Lacamas Lake. The paper mill, through various owners, has continued to be a mainstay of the city throughout the decades.

Industry in Camas has shifted, however, to now include many high tech and financial service companies. Ideally situated on the Columbia River, Camas is a neighboring community of Vancouver, WA and across the river from Portland, OR. Camas is experiencing a booming economy and rapid growth with many housing developments either planned or underway. The City of Camas has a comprehensive master plan with the projection of nearly doubling in population in the next 20 years from a population of 19,620 residents to 34,000.

The new Discovery High School serves the entire Camas School District in east Clark County. Students from anywhere within the District's boundaries may apply to attend. The criteria for acceptance into the school is completely student-interest based, and all students who want to attend are accepted. If the number of applicants ever out-numbers the program capacity, then a lottery system will be used to determine acceptance.

The District purchased 30 acres and a 55,000 SF two-story office building from Sharp Laboratories of America, in the Prune Hill area of the community. The lab/office building was converted to a Project-Based Learning Middle School (now called Odyssey Middle School), designed to serve 450 students, grades 6 through 8. With the addition of the new high school on the same property, there are many opportunities to share resources both educationally and operationally. These benefits include the creation of a unique culture and identity for the PBL program, accommodating the district's growing population, and streamlining operational costs. Other advantages to locating the new high school at this site include opportunities for outdoor learning and the proximity to industry to foster real-world partnerships.

Student Voice

Workshops

Study Tours

Science and Math Institute (SAMi)*
TAF Academy
Getting Smart Campus
The Museum of Flight
Marysville Getchell High School Campus*
Allen Research Commons (University of WA)
Summit Sierra
Raisbeck Aviation High School*
Vashon Island High School*
Rosiland Franklin STEM Elementary
High Tech High
High Tech High Elementary
High Tech High Graduate School of Education
High Tech High North County
e3 Civic High

**MacConnell Award Winner or Finalist*

Shaping a New Vision for Learning

Prior to the start of design, the District assembled a group of educators and community members to embark on a discovery process intended to shape the vision of their new high school. This process included intensive workshops, tours of facilities, and conversations with educators, students, and innovators across the country. This process ultimately resulted in a set of Guiding Principles that serve as a tool for both educators and designers to shape and implement a vision for Project Based Learning in Camas.

Learning Is Active & Experiential

Through the completion of authentic projects, students apply their learning in real-world settings. A range of hands-on and interdisciplinary activities and approaches ensure dynamic learning environments allow our diverse set of learners to reflect on their personal learning and growth. Spaces and furnishings vary in size and type to support a variety of activities ranging from quiet reflection to messy, collaborative work. Driven by inquiry, our integrated curriculum builds upon student interests and passions. Views into interactive learning environments celebrate student work-in-action.

Flexible & Adaptable Spaces Support Student Growth

Transformative learning environments and facilities support ever-evolving learning cultures, programs, student populations and educational delivery methods. Spaces allow for flexibility in the size of groups, types of activities, and even age of students. Design decisions acknowledge the need to adapt over time, and offer variable options as students grow as thinkers. Strategic design takes into account the importance displaying our scholars' work as students creatively curate their own learning environments.

Community is Connected through Partnerships

A strong sense of community is built both within the school and the community. Since real-world knowledge and skills are acquired through exploration and experience, the "walls" between school and community are permeable in ways that enrich student growth through meaningful partnerships. Students are linked to the local and global community via mentors, internships, and job shadowing activities and partners provide guidance, facilities and resources in the service of students. Shared uses of community assets support the whole child, preparing students for an ever-changing world of work and education.

Personalized Programs Serve All Students Well

All means ALL. Honoring individuality and diversity, we offer small, personalized learning environments where each student is known well and challenged to achieve. A balance of challenges and supports, based on individual interest and needs, are accessible to all, regardless of class, race, culture or ability. Resources are equitably distributed to ensure success, hope, and joy for each student.

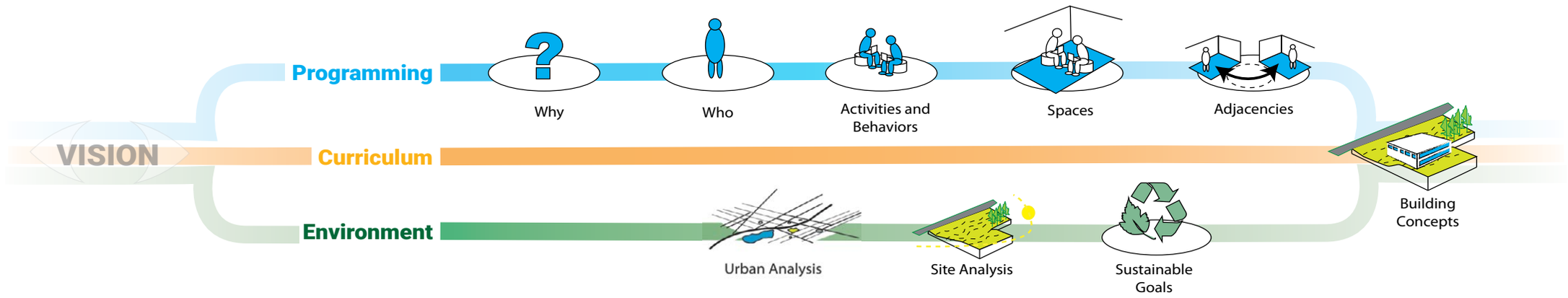
Collaborative & Creative Experiences Foster 21st Century Learning

Creative and collaborative experiences allow students, staff and community partners to use their imaginations, learn and grow. Relationships are positive, nurturing and cooperative. Interdependent thought and interdisciplinary work are supported by spaces and programs that nurture bodies, minds and spirits. Transparency encourages teamwork, creativity and accountability.

Learning is Alive

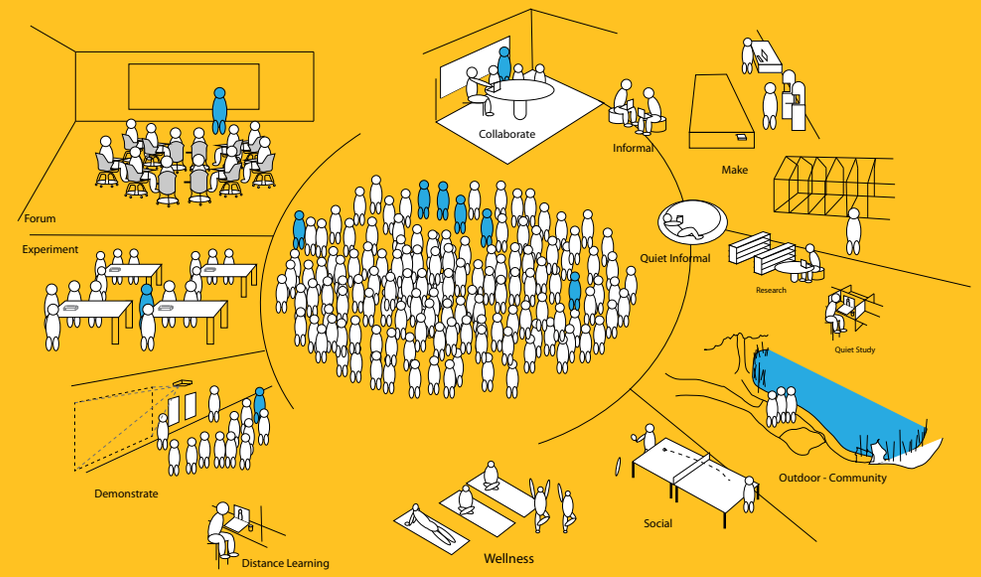
Drawing upon multiple sources of inspiration, students and staff are motivated by their interests and passions. Rather than focus on achievement solely for achievement's sake, we instill a love of learning, where horizons spring wide and the unknown becomes knowable. Learning is joyful.

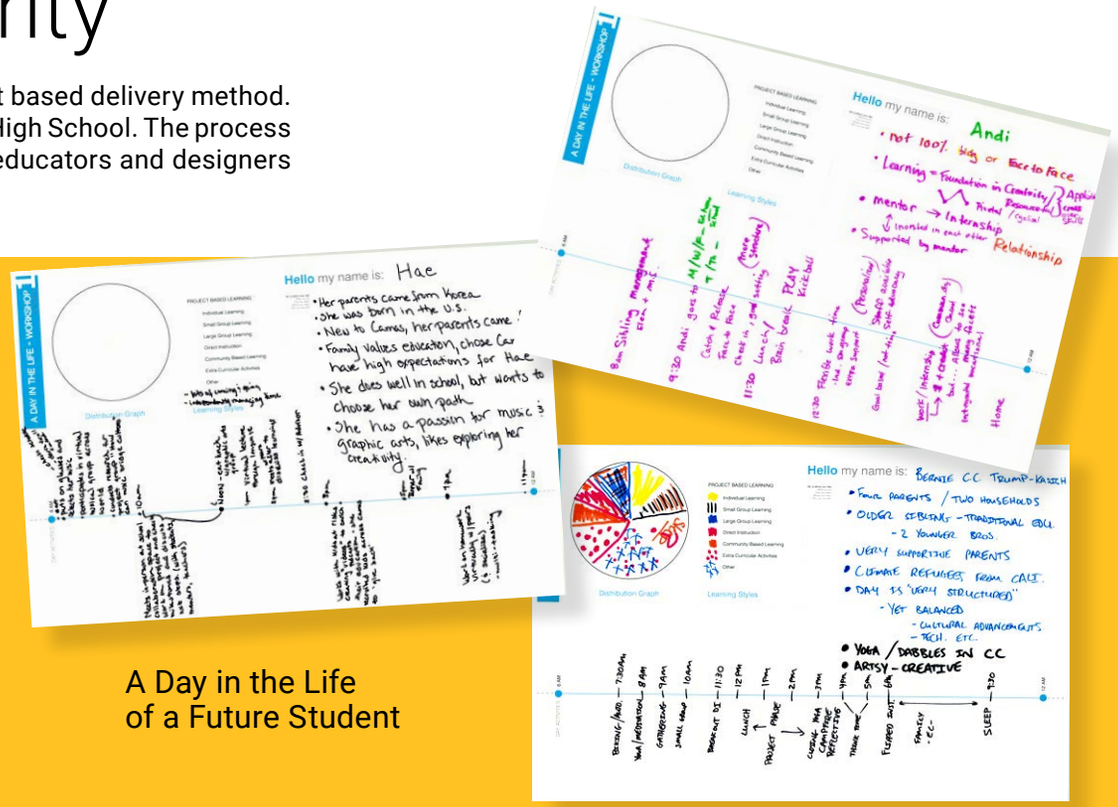
"[I love] being able to be creative in school and create our own ideas for projects and learning. Also, being able to handle our learning in our own way and being able to choose what classes we take (with recommended options) because we are responsible for our own learning and future." - Camas Student



Integrated Process with Integrity

The process of designing the building was an opportunity to model and explore the project based delivery method. Participants in the process modeled the desired behaviors of future students at Discovery High School. The process was exploratory, collaborative, engaging, and fun. The outcome of the process provided educators and designers an opportunity to authentically experience the PBL learning process.





A Day in the Life
of a Future Student

Behavior Based Programming

With the guiding principle, “Contribution to Community,” the integral role of Discovery High School was considered from the very beginning. Rather than create another comprehensive high school, both parents and the District were looking to align a new way of learning with a forward-thinking facility.

Community Voice

Early lessons and feedback from the Design Advisory Team (DAT) confirmed that we were on the right path and that we were positioned to make a positive impact on the Camas Community.

I have been so impressed by the sense of community and positive relationships we have experienced.

Transparency into vibrant learning environments provides inspiration.

Authentic project- and hands-on learning does not only take place in the classroom.

Honest and hard conversations, in safe and trusting environments, are what we should aspire to.

This experience gives me great confidence in our community to do the right things for kids.

Contextualize student interests and passions.

Let's capitalize on what we do well, combining our passions, context, relationships and community connections to serve students in flexible spaces.

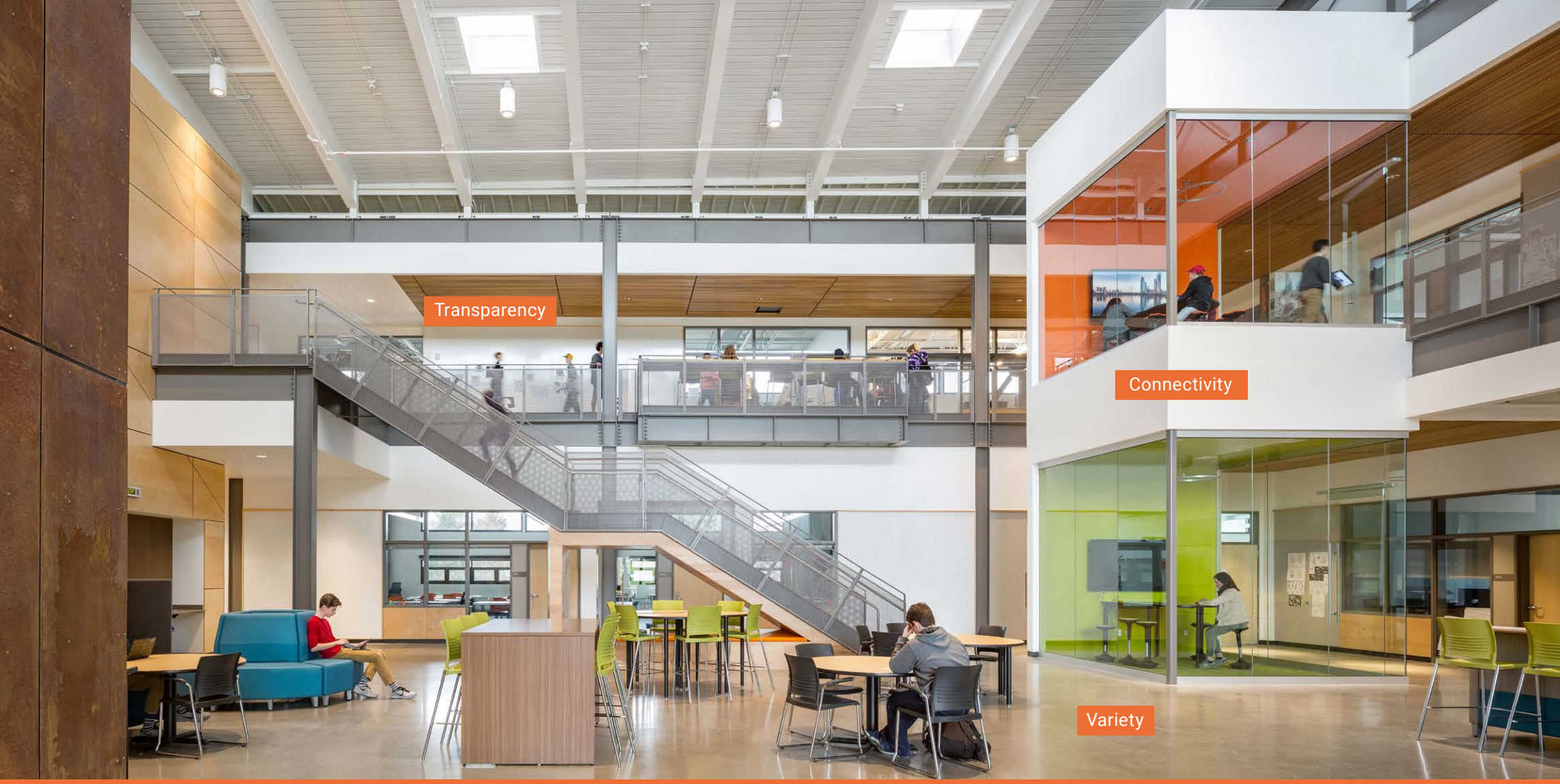
We need to bake in flexibility in design, practices and thinking.

We saw that it's possible to foster every student having a significant relationship with an adult in school. Perhaps that should be our number one objective.

Spaces need flexibility, programs need passion and leadership is vital.

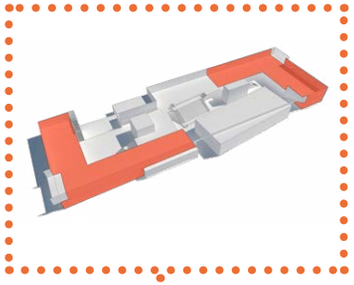
Let's ensure students can address real-life problems and change their minds as they learn new things.

We have a significant opportunity to make connections for kids, which is the art of our business.



Supporting a Variety of Learning & Teaching Styles

The driving culture of “building connections and relationships” is a key aspect of design and programmatic layout. Designed around a Project-Based Learning Program, the school fosters a sense of connection and community through adaptable and flexible spaces with varying layers of transparency. The variety of spaces encourage students and staff to connect with one another, their built environment, and the natural landscape.



R+D Pods

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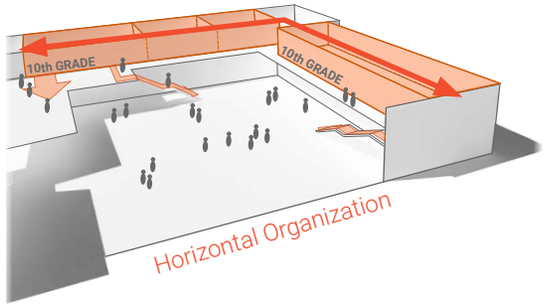
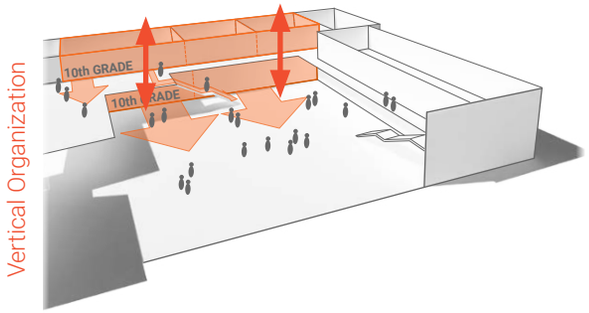
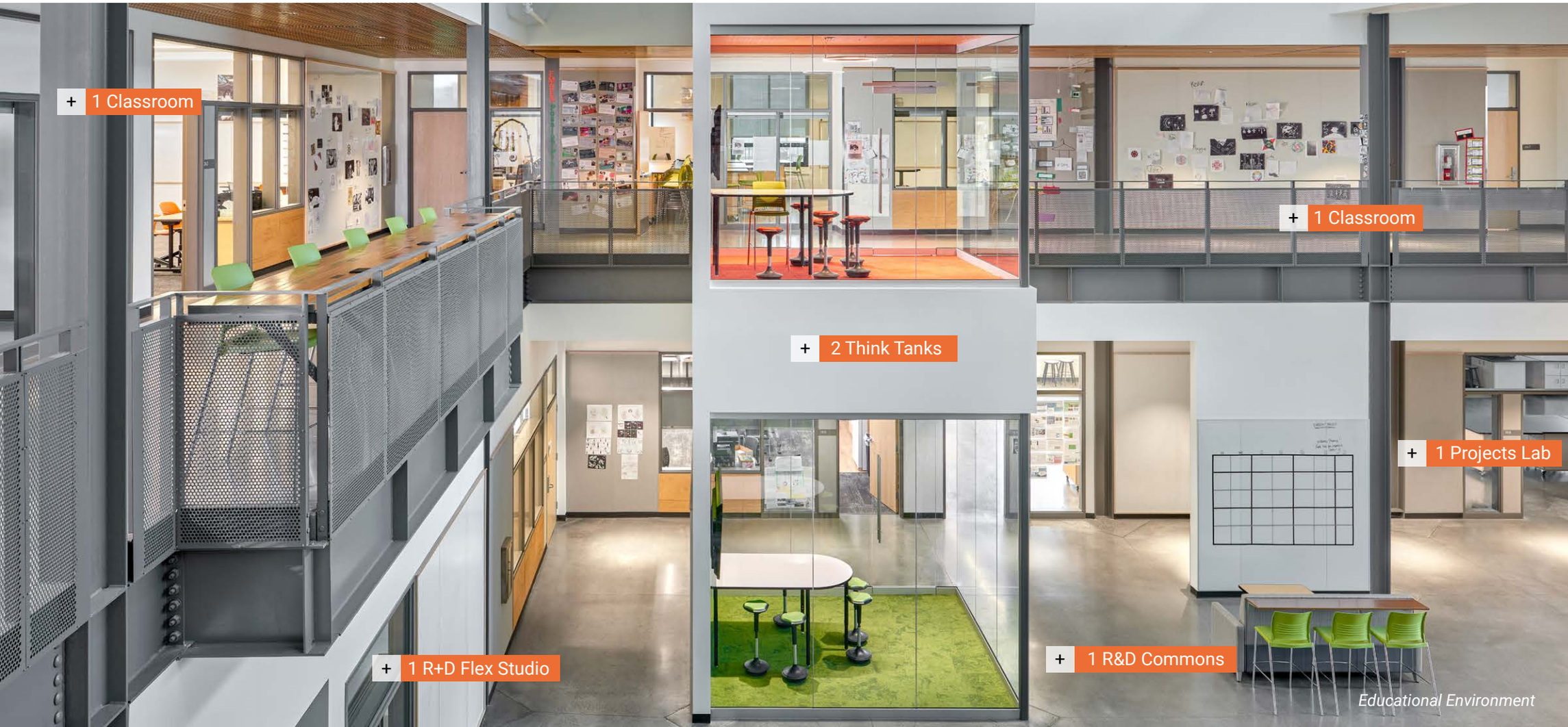
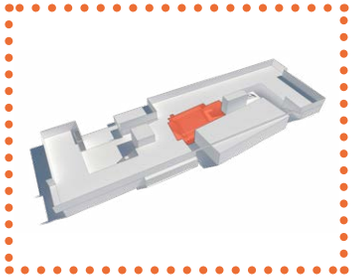




Core learning spaces are organized to provide teams the flexibility to zone the building either horizontally or vertically



Educational Environment



Hub

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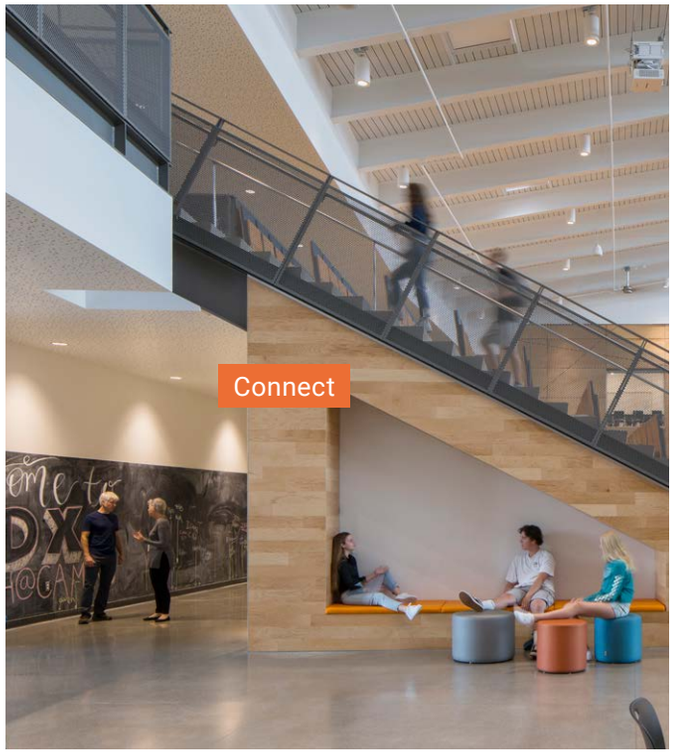

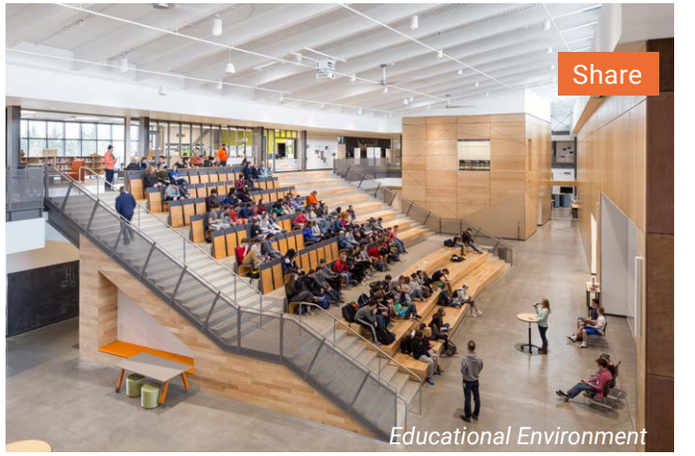

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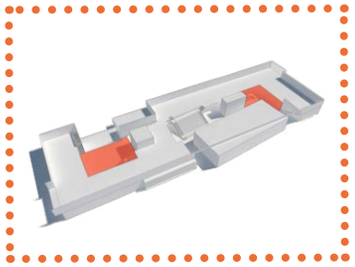

R+D Commons

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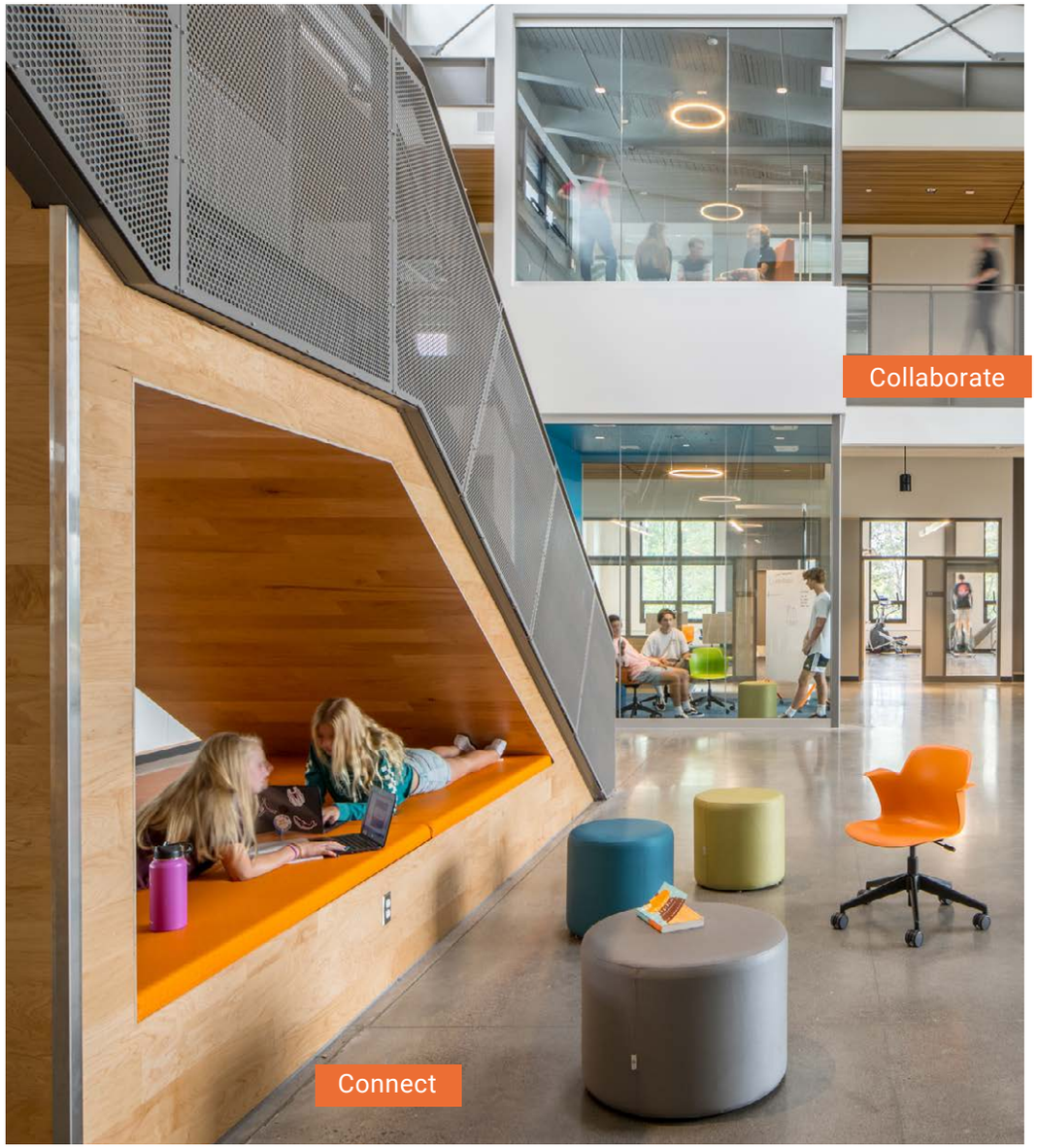

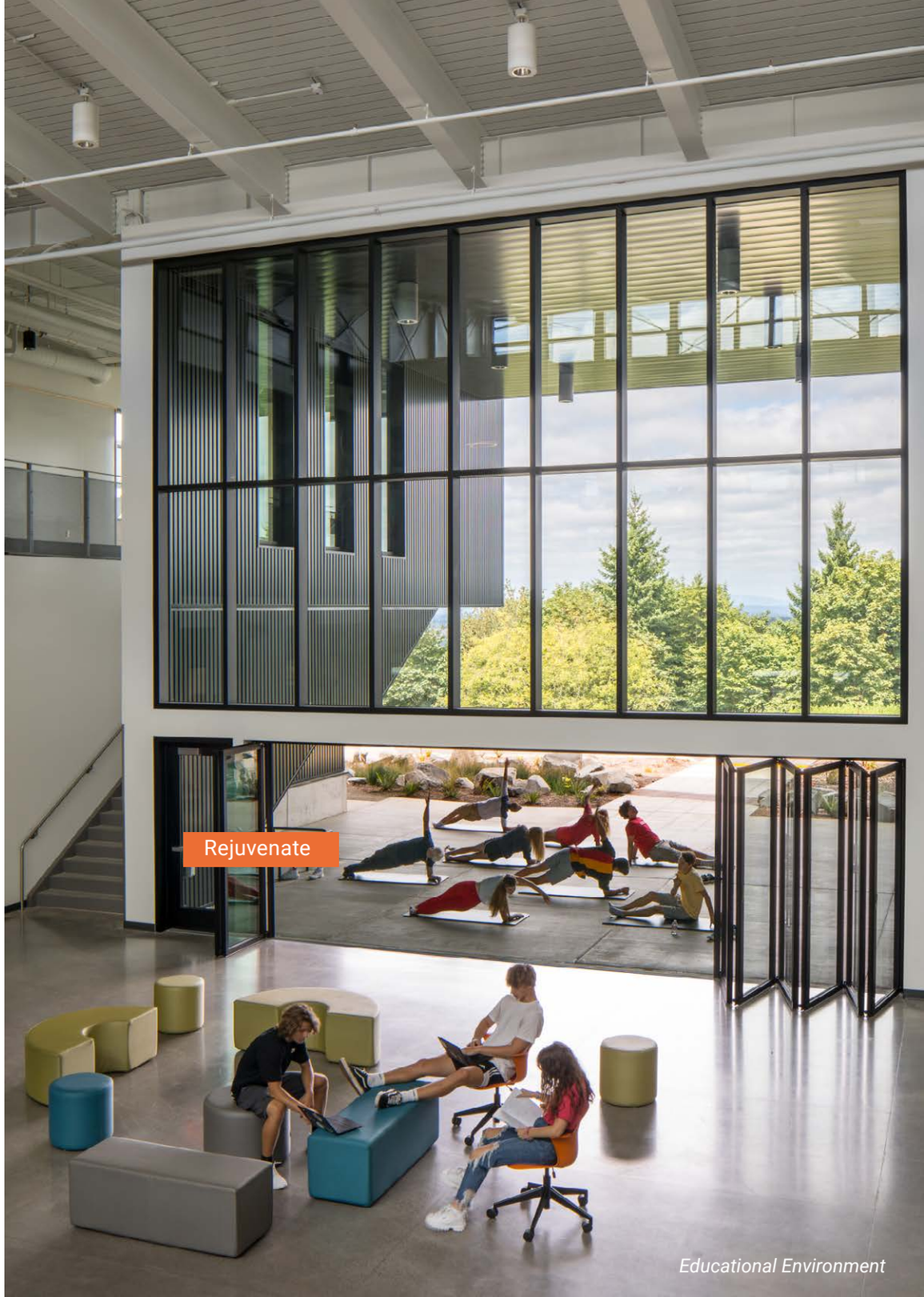

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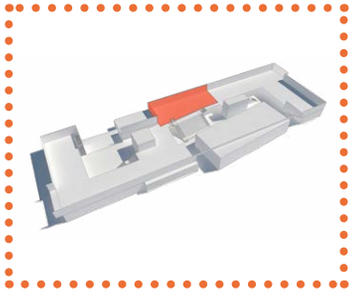
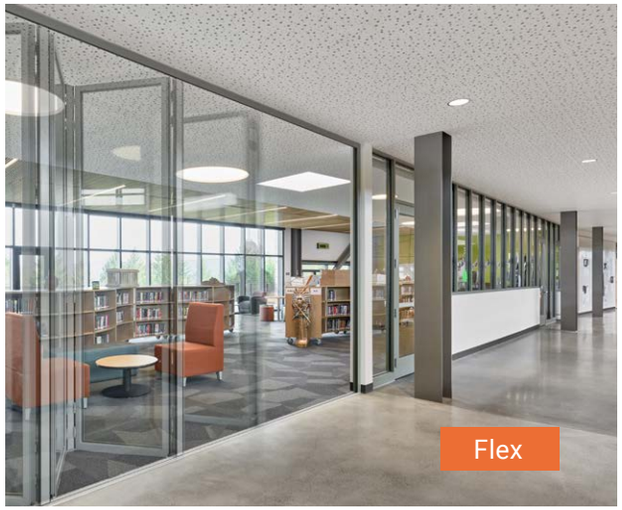


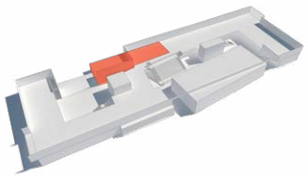
Research Node

The Media Center, or "Research Node," serves as home base for research reference material and technology. Centrally located, the Research Node is designed to complement the Fab Lab's physical exploration of ideas and provide a quiet place for idea generation and research.



Views into interactive learning environments celebrate student work-in-action

Fab Lab



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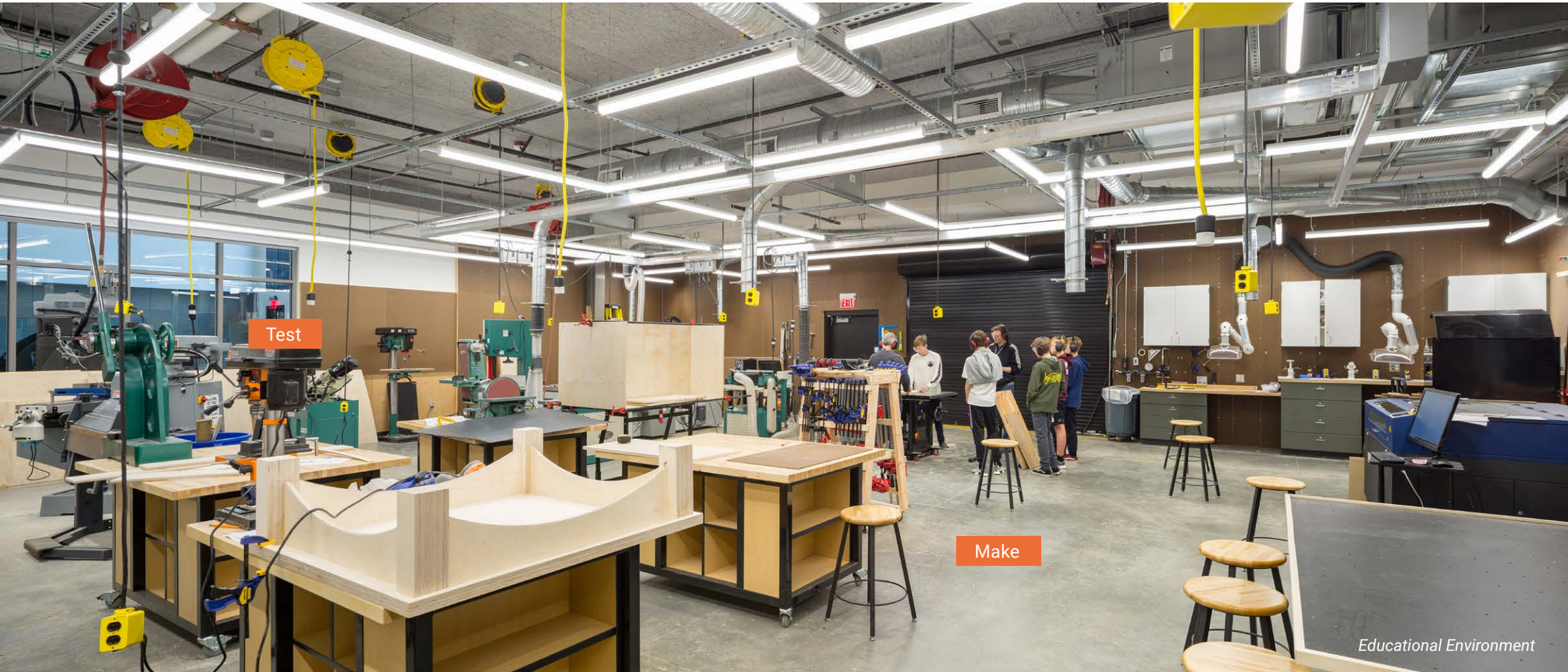
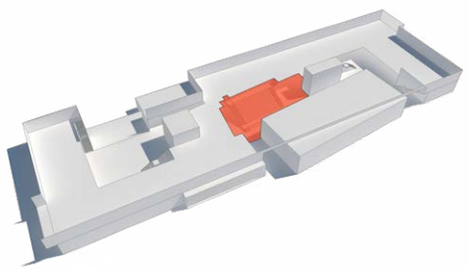
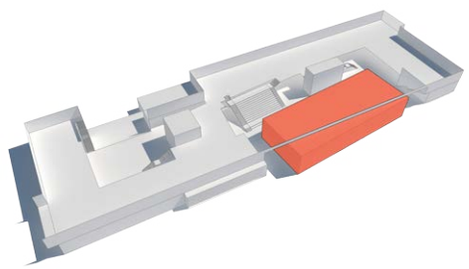


Educational Environment



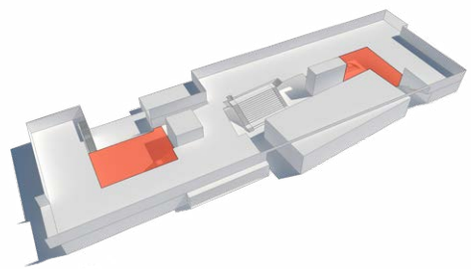
HUB

The HUB is at the heart of the school and the center of culture and community. It is open and centrally located and includes a flexible seat stair, opportunities for lecture, performance, gathering, and eating.



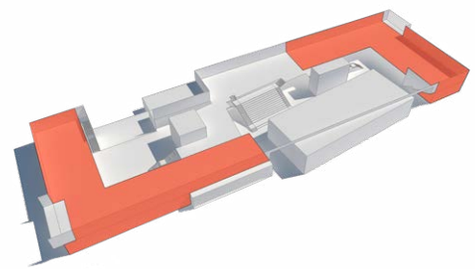
EXHIBITION

Flexible spaces requiring greater volume including music, sports, curated exhibition and performance occur here. Additional spatial flexibility is provide through operable walls that allow these space to expand into the adjacent HUB.



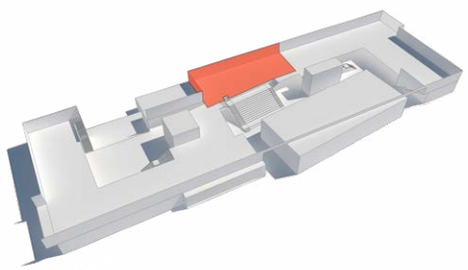
R+D COMMONS

Double height commons space used for study, research, and group work connected to each R+D Pod serving 300 students each with direct access to the outdoors.



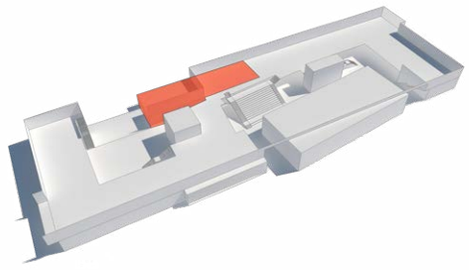
R+D PODS

The core learning spaces of four suites (two stacked at each end) where 150 students will spend the majority of the day. The suite includes team studios, classrooms, project labs and think tanks.



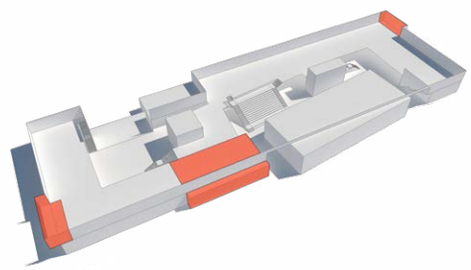
RESEARCH NODE

A center for research and technology offers students quiet spaces for small group or individual research and media studies.



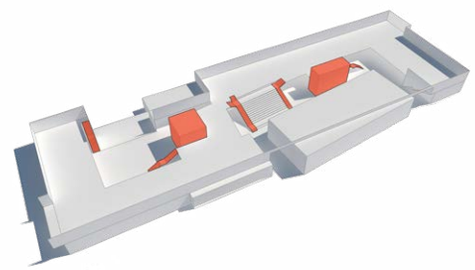
FAB LAB

A central fabrication space for all 600 students provides access to a variety of specialized equipment. Managed and supervised by specialist educators, this lab exists as a place where students can go to receive project guidance.



ADMIN

“Decentralized Administration” provides shared teacher collaboration space and career guidance where the students are. The main centralized administration space provides safety and security at the entry and includes front office space.

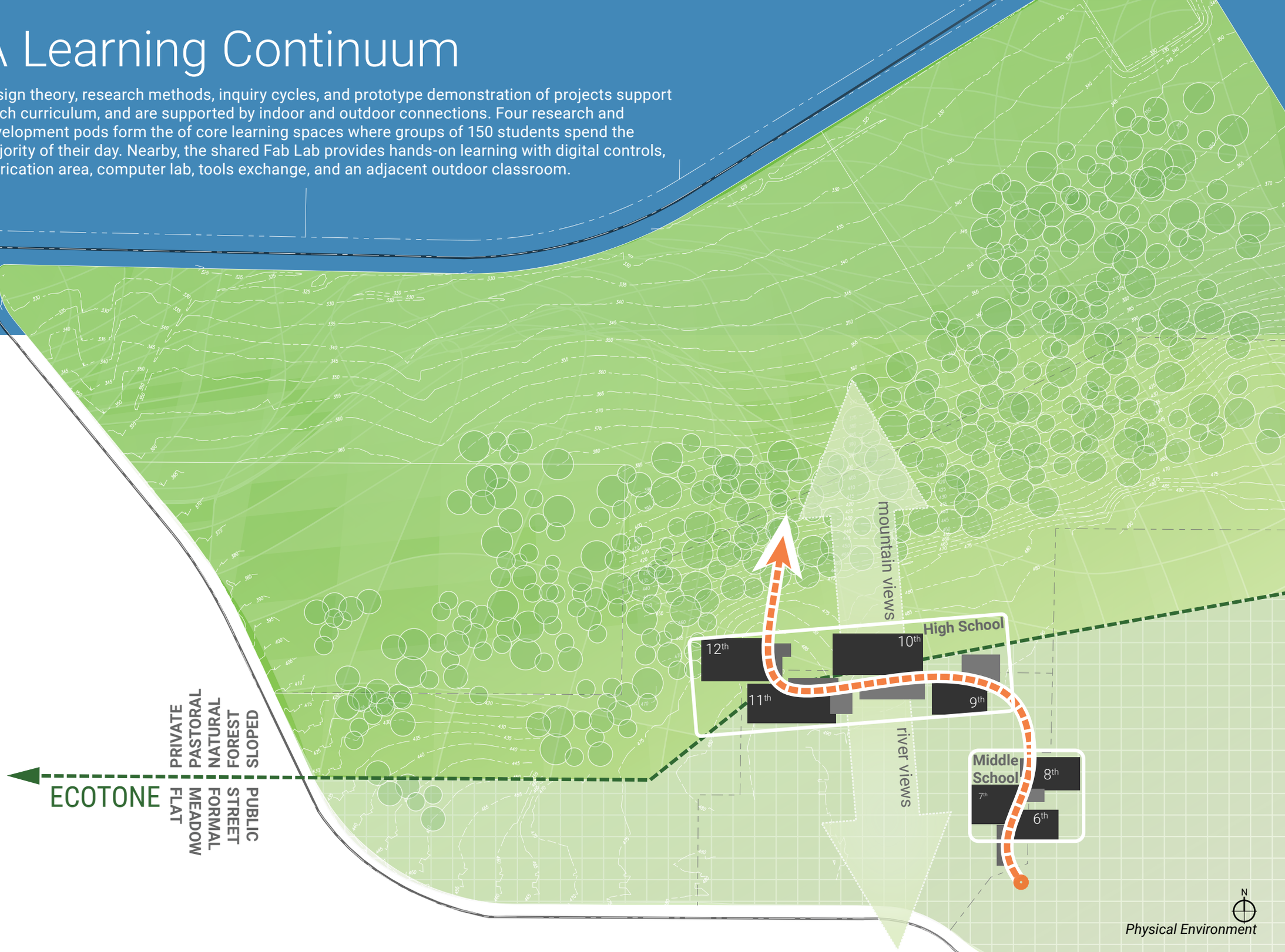


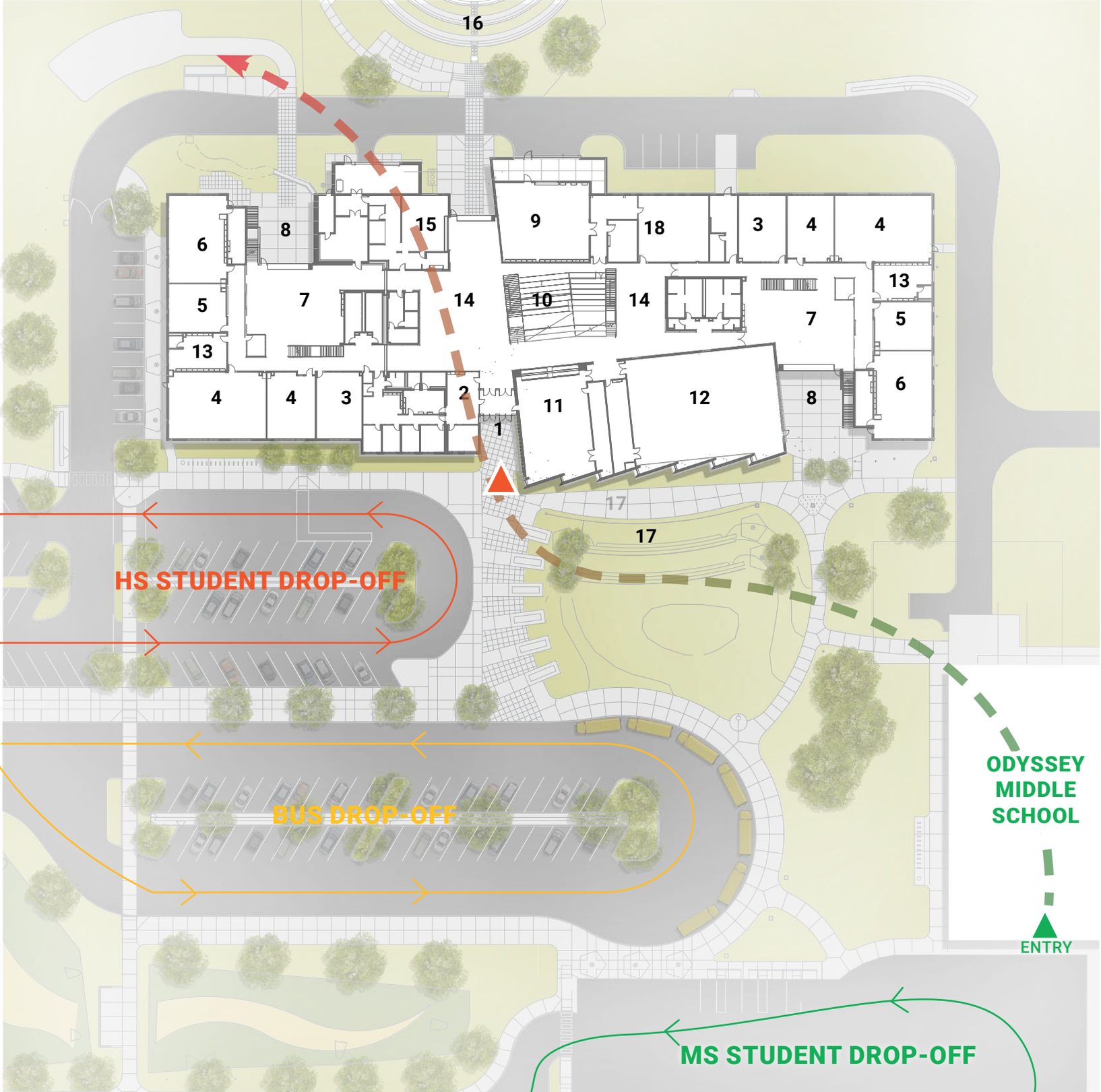
VERTICAL CIRCULATION

Circulation was strategically placed to allow ease of connection while providing spatial separation and zoning.

A Learning Continuum

Design theory, research methods, inquiry cycles, and prototype demonstration of projects support a rich curriculum, and are supported by indoor and outdoor connections. Four research and development pods form the of core learning spaces where groups of 150 students spend the majority of their day. Nearby, the shared Fab Lab provides hands-on learning with digital controls, fabrication area, computer lab, tools exchange, and an adjacent outdoor classroom.





Project-based learning allows students to discover themselves as innovators, scholars, and community members. The design for Discovery High School is based on the "student journey." As part of a larger campus, students begin their project-based learning experience at Odyssey Middle School (pictured), just southeast of Discovery High School.

The existing natural habitat of the immediate site transitions from forest to meadow. Discovery High School is sited along this "ecotone;" where students transition between grade levels and the site transitions between two ecologies.

1. Entry
2. Administration
3. Classroom
4. R&D Studio
5. Flex Classroom
6. Projects Lab
7. R&D Commons
8. Outdoor Commons
9. Fabrication Lab
10. Learning Stair
11. Flex Exhibition
12. Gymnasium
13. Mission Control
14. Flex Assembly
15. Kitchen / Servery
16. Amphitheater
17. Outdoor Learning
18. Digital Lab

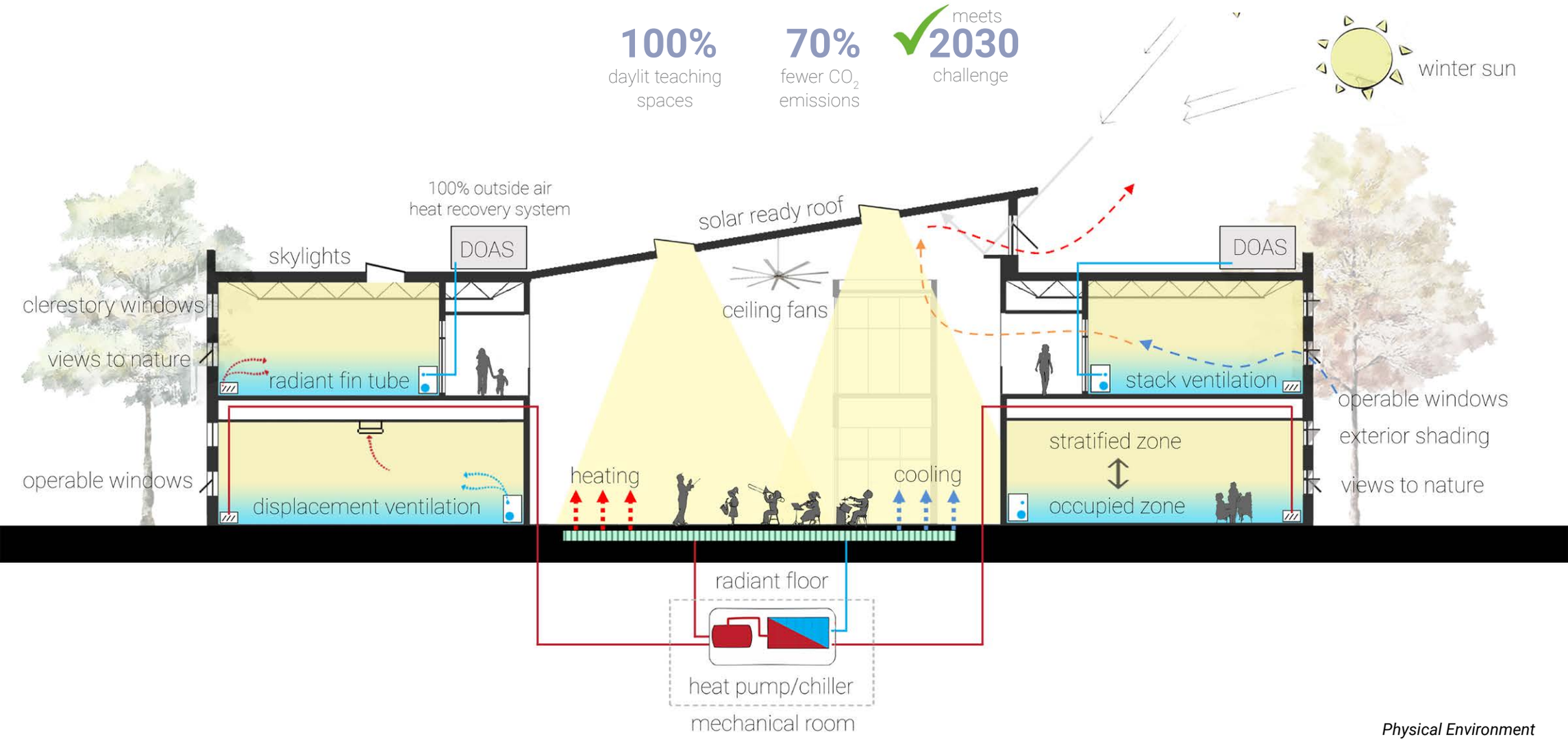
"The students always talk about the light in the building."

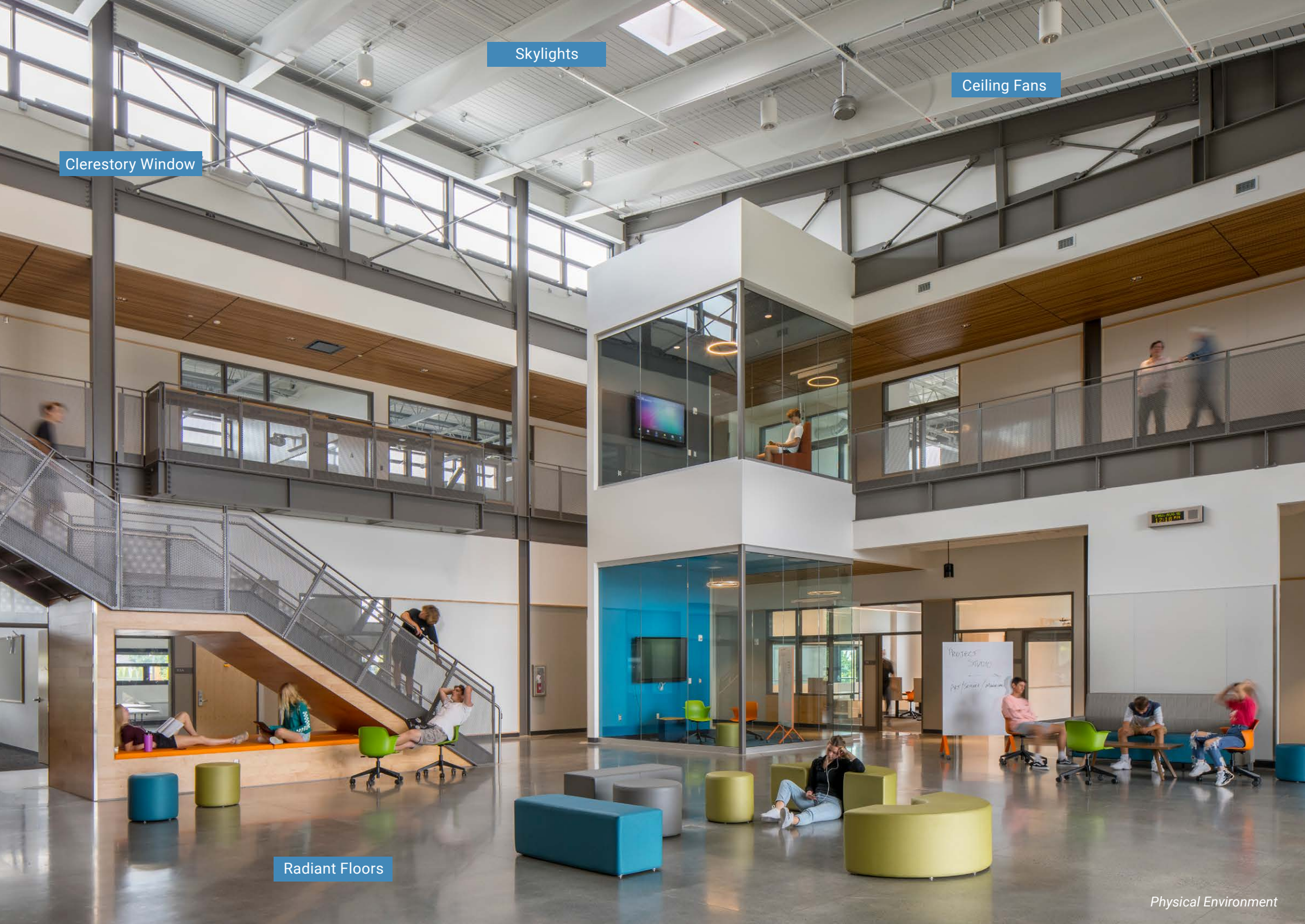
- Aaron Smith, Principal
Discovery High School

Designed for Wellness

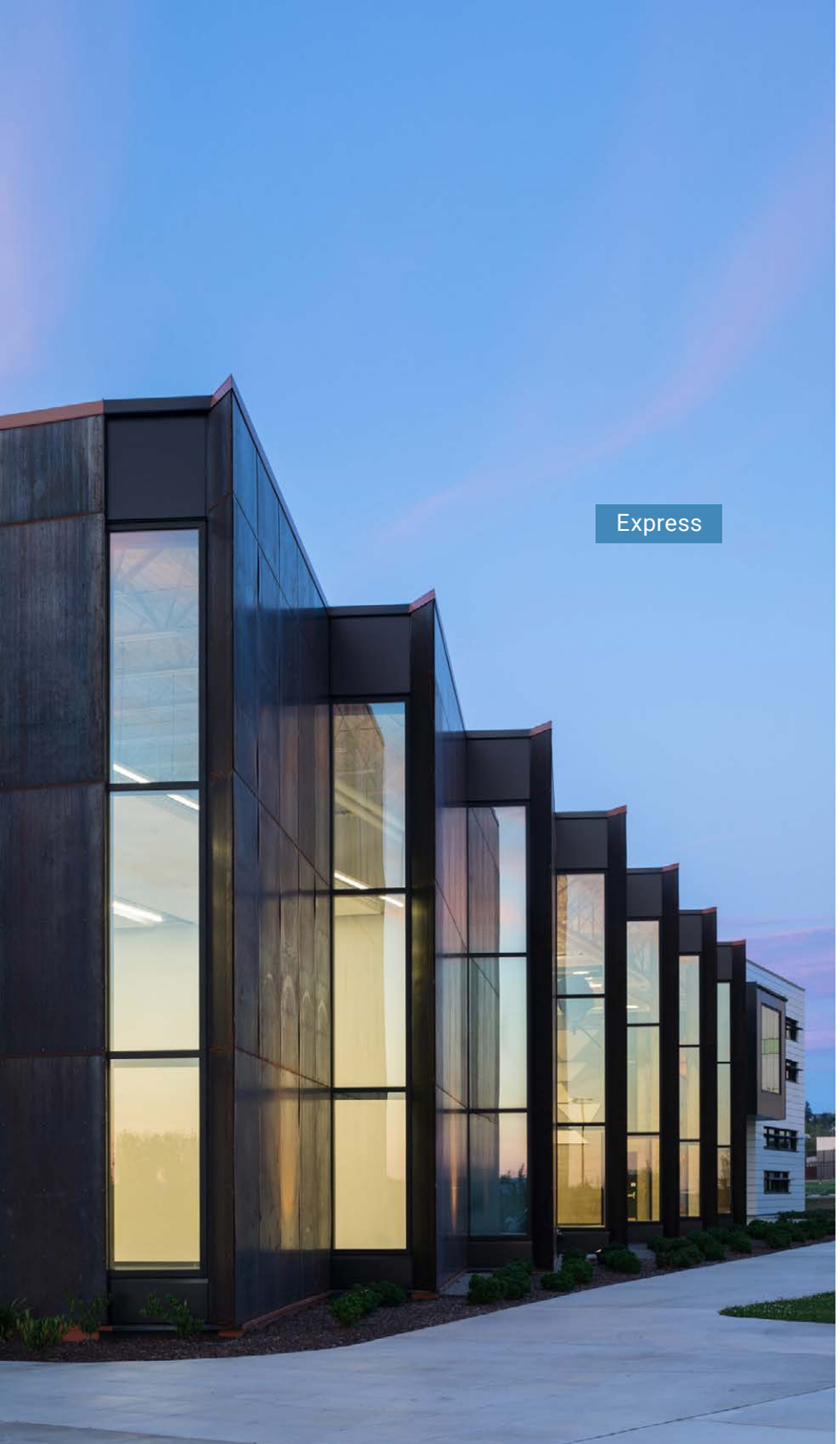
Discovery High School implements several strategies to improve the wellness of students and staff as well as the surrounding environment. Natural daylighting, views to nature, and access to outdoor learning spaces played a large role in shaping the building's form. All classrooms are 100% daylit and have direct views to nature.

Building energy conservation measures included the use of daylight, displacement ventilation with 100% outside air, LED lighting, natural ventilation, radiant heating in floors, low flow fixtures, and high performance glazing. The building generates 70% fewer CO_2 emissions than the average US building of the same type and size. This meets the projects 2030 Challenge goal with an EUI of 22.1kBTU/sf-yr and equates to a reduction of 885 tons of CO_2.

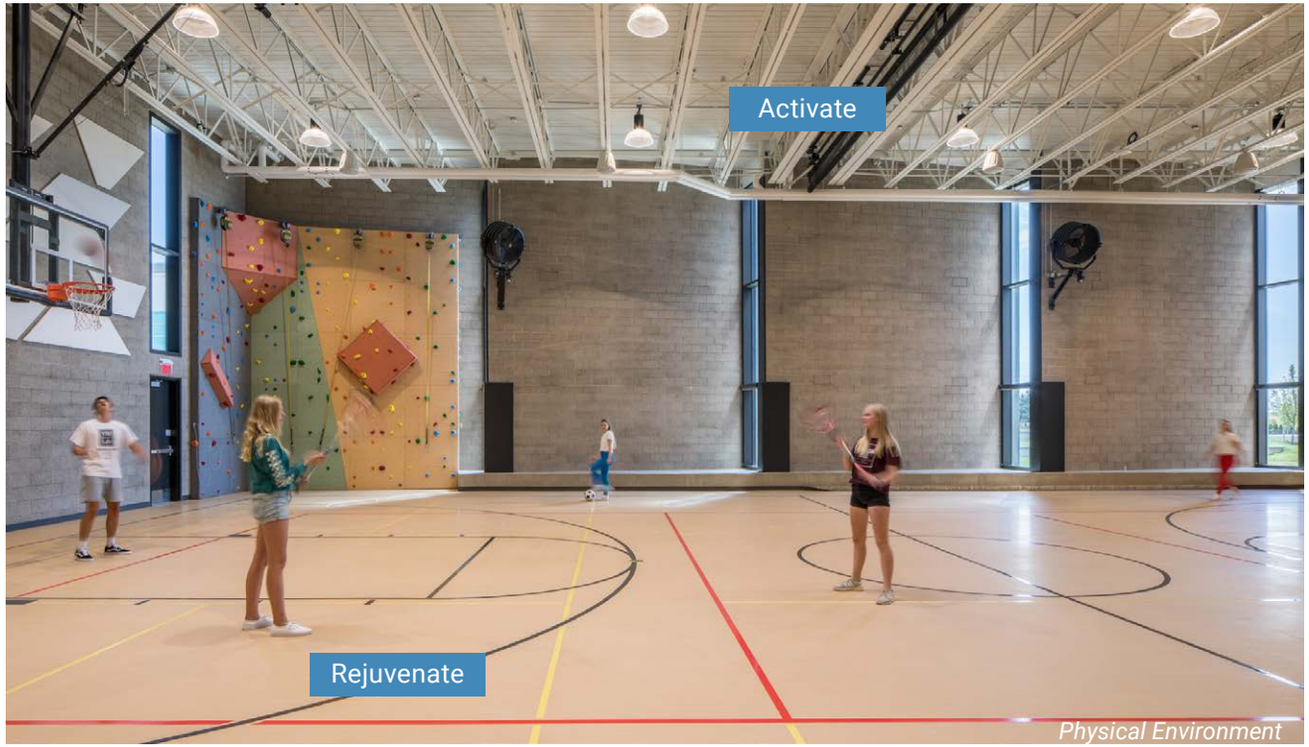



Skylights
Ceiling Fans
Clerestory Window
Radiant Floors

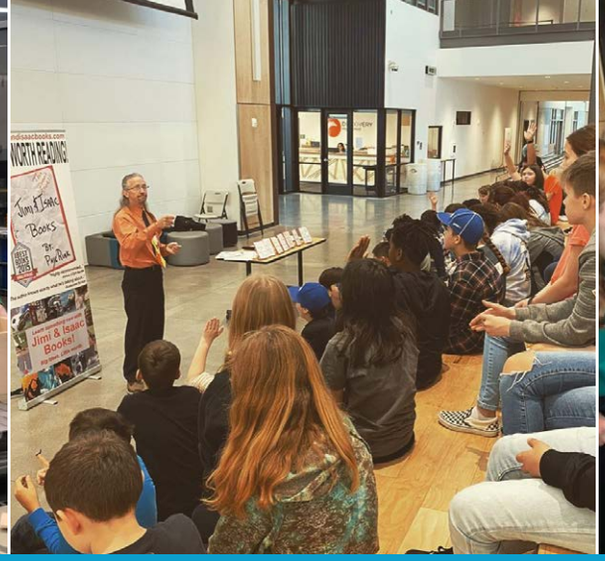
Sitting along the edge of a forested area, Discovery High School optimizes views to nature from all spaces and sides of the building.



The Fitness area occupies a central position within Discovery High School. Direct connections to the Flex Exhibition and Hub, allow for students and staff to actively engage with all spaces separately or as one large space. Daylighting, thermal comfort, views to nature, and the expression of program elements were primary drivers in the design of these spaces.



Indoor/Outdoor learning and collaboration areas allow for flexible program environments for a variety of activities, fresh air, and connection to nature.



Outcomes

Video Link:
Student Tour Video
https://youtu.be/xg_w53AcU7c

Video Link:
Discovery Parents and Students: In Their Own Words
https://www.wevideo.com/view/2097430262

Achieving Educational Goals

Discovery High School is designed to adapt to an ever-evolving project-based learning pedagogy with the understanding that learning today will not look the same tomorrow. The school principal finds that walls are open on a constant basis and students are flowing in and out of the classroom with collaboration and autonomy, while still providing the safety and security that goes with transparency.

At the research node, the school's librarian finds himself both more accessible as a resource by having open access from the circulation desk to the hallway, as well as encouraging students to use the adjacent media hub for study or lunchtime activity. He reports that his engagement with the students is five times greater when his desk window and nearby wall are open as opposed to serving as an isolated resource in a closed room.

The district itself continues to explore the opportunities of non-traditional learning and campus co-location given the current opportunities located at Discovery High School and adjacent Odyssey Middle School.

Unintended Results & Achievements

During the pandemic, the school benefited from adaptable design decisions including the flexibility to open up and modify learning spaces while still having full supervision through transparency. Furthermore, students at Discovery High School are already used to this fluid, distributed model of learning. Natural air flow can be promoted by opening the flex exhibition into the nearby learning stair and research node, and the walls at each of the two R&D pods can open up to outside learning spaces and covered patios.

The shift to full on-line learning during the pandemic revealed some key advantages of the PBL model.

1. Content was delivered to students in a concise and coordinated package developed by their interdisciplinary teaching teams. This eased the difficulty for students to manage different content from different subject areas.

2. Students proved to be more resilient and adaptable to the shift to on-line learning.

3. The abundance of collaborative space and non traditional teaching environments afforded more flexibility to socially distance students for in-person instruction.

4. The Fab Lab was utilized to produce face coverings during the pandemic. This provided another opportunity for students to engage in helping solve real-world problems.

Achieving Community Goals

The new school is a wonderful asset to the community and frequently used during after-school hours for formal and informal learning opportunities, as well as various community functions. Many Camas Community Education classes are taught at the school and on the grounds.

Spaces that lend themselves most easily to community use are the fitness areas, exhibition space and outdoor theater, central Hub with learning stairs for presentations and performances, café, and Fab Lab (with district educator supervision). Each of these spaces are designed for easy after-hours access (either exterior doors directly into the space or close by) and access to restroom facilities, while securing as much of the rest of the school building as possible.

"We learn more by looking for the answer to a question and not finding it than we do from learning the answer itself."

- Lloyd Alexander
American Author