

DISCOVERY HIGH SCHOOL

CAMAS SCHOOL DISTRICT | CAMAS, WASHINGTON



LEsolutions Planning & Design Awards
New Learning Environment

Executive Summary

Discovery High School

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.

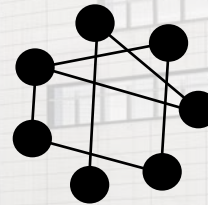
Discovery High School is a new, ground-up facility designed specifically to support project-based learning for 9th through 12th grade students. This curriculum-based approach is new for the high school level in Camas School District, and a continuation of the program from the recently renovated project-based learning middle school. The new program centers on collaborative, integrated learning teams with a STEAM focus. To best accommodate the school's curriculum delivery, many parameters that typically define K-12 design are not in place as they would be in a new or replacement school. In addition, to conserve energy resources and promote student and staff wellness, sustainable design features include a focus on daylighting, and natural cooling and building systems.

From the beginning stages of a project, to the end-result, the team saw a shift in the collaboration needs to provide the kind of facility that meets 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: variety of spaces, mix of volumes, adjustable walls, and adaptive technologies. Flexibility and adaptability are a product of our 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.



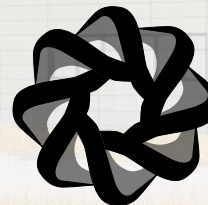
ENGAGE

Increase student engagement by activating content shared through project-based learning. PBL challenges students to tackle content and real-world issues using a hands-on, collaborative approach.



CONNECT

Provided with a small, personalized learning environment, students and teachers connect as learners and individuals, opening the door for deep and meaningful relationships.



DISCOVER

Project-based learning helps students discover themselves as innovators, scholars, and community members. In addition to grade-level projects, students have the opportunity to develop passion projects to pursue elective credit and future career opportunities.

Scope of Work and Budget

Facility Type: New Construction

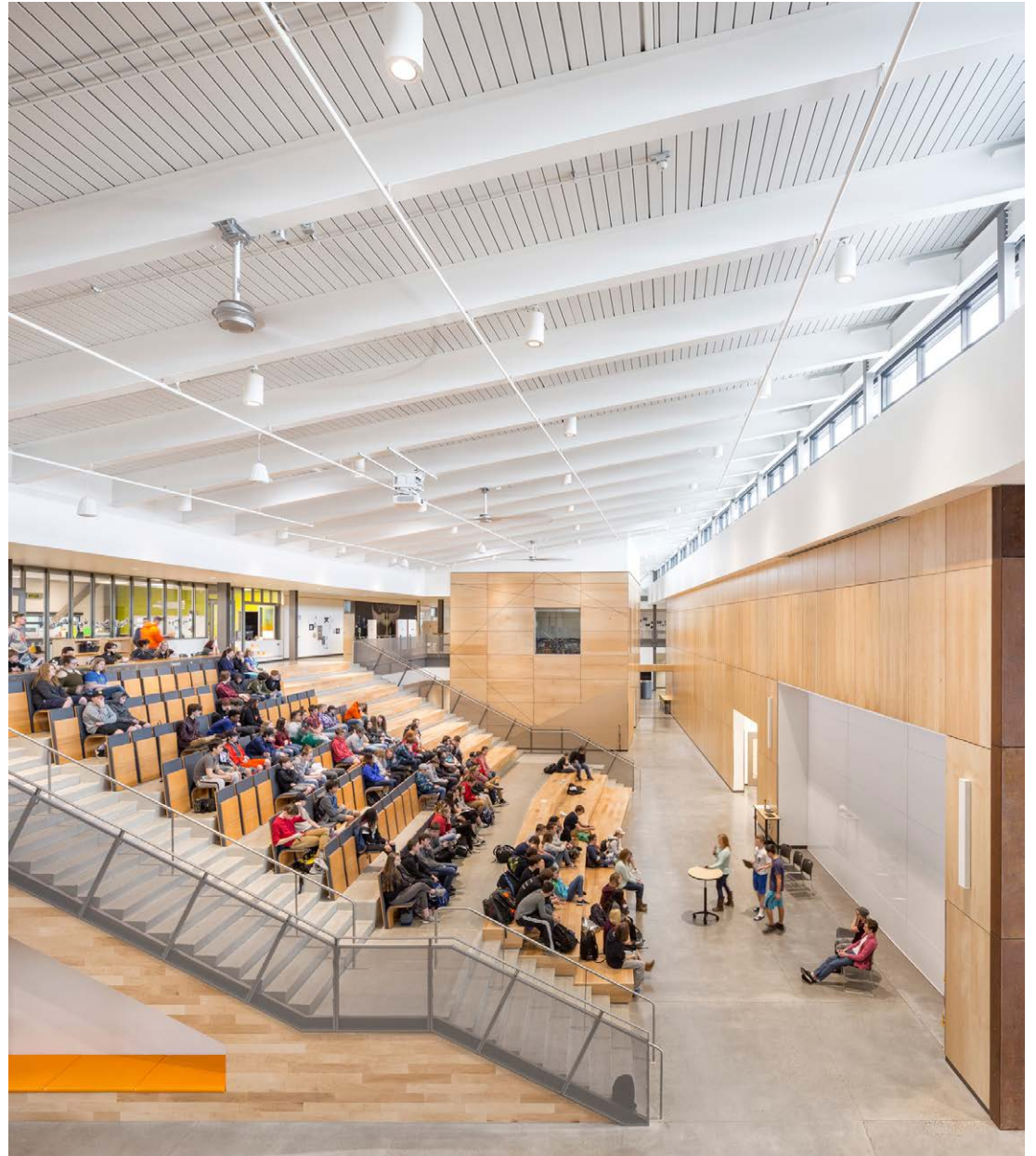
Grade Levels: 9-12

Square Foot Area: 89,600

Student Capacity: 800

Construction Cost: \$34,272,000

Construction Delivery Method: Design Bid Build



School and Community Engagement

The Camas Community

The name “Camas” comes from the camas lily, which grows wild in the area and was an important food source of early Columbia River valley Native Americans.

The Camas community was founded in 1883 (six years before Washington became a state in the Union) as the site for a new paper mill to supply papers 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.

However, industry in Camas has shifted to now include many high tech and financial services companies. Ideally located 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 is projected to nearly double in population over the next 20 years. This is largely due to the job growth and opportunities, idyllic location, and quality of schools.

The new Discovery High School serves the entire Camas School District in east Clark County. Students from anywhere within the School 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 out-number the program capacity, then a lottery system is 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 property, there are many opportunities to share resources (both educationally and operationally), create a unique culture and identity for the PBL program, accommodate the district’s growing population, and streamline operating costs.

Other factors influencing Camas School District and the community are a highly involved parent culture with expectations of a high quality, rigorous educational experience; top performance in the state on standardized testing; low free and reduced lunch rate district-wide (16.2% of district students qualified in the 2014-15 school year, in comparison to the Washington state average of 45% for the same year); a 4-year cohort graduation rate of over 91% in the 2014-15 school year, with the state average of 77% for the same year; and minimal racial/ethnic diversity with the top four designations as follows: White 77.2%, Hispanic/Latino 7.8%, Two or More Races 7.5%, and Asian 5.9% (all other categories under 1%).

Stakeholders

Throughout the development of our concept and design, we met with a number of community members, administrators and staff from the community of Camas. Involving the community in the decision making process led us to developing the program and adjacencies of many spaces as well as defining strategies that guided the design of the project. Additionally, closely analyzing the site and the context of the school allowed us to develop a strong and responsible site strategy that will inform future building concepts.

Challenges

This is the first high school level project-based learning facility for Camas School District. The design of the curriculum and the building were both concurrent and overlapping. Much of the design process for the building was leveraged to provide educators and community members an additional method to explore and test new educational strategies. This created unique challenges as the exact use of spaces evolved throughout the process, requiring the building design to be more activity- and/or behavior-based vs program-based. The resulting flexible learning environment supports a varied and dynamic learning experience.

In addition, the District had originally planned for the school at another location. The opportunity to create a PBL “campus” was an opportunity that emerged later, requiring a different

approach to the school to support a continuum of learning from middle school through high school.

Available Assets

A PBL-focused approach was already in process at nearby Odyssey Middle School, located on the same campus as Discovery High School. Building off lessons-learned, the District was able to implement some of that program on a larger scale as they began the design of the high school. The natural ecotone on site provides integration with the landscape, supporting outdoor learning with biologically rich surroundings.

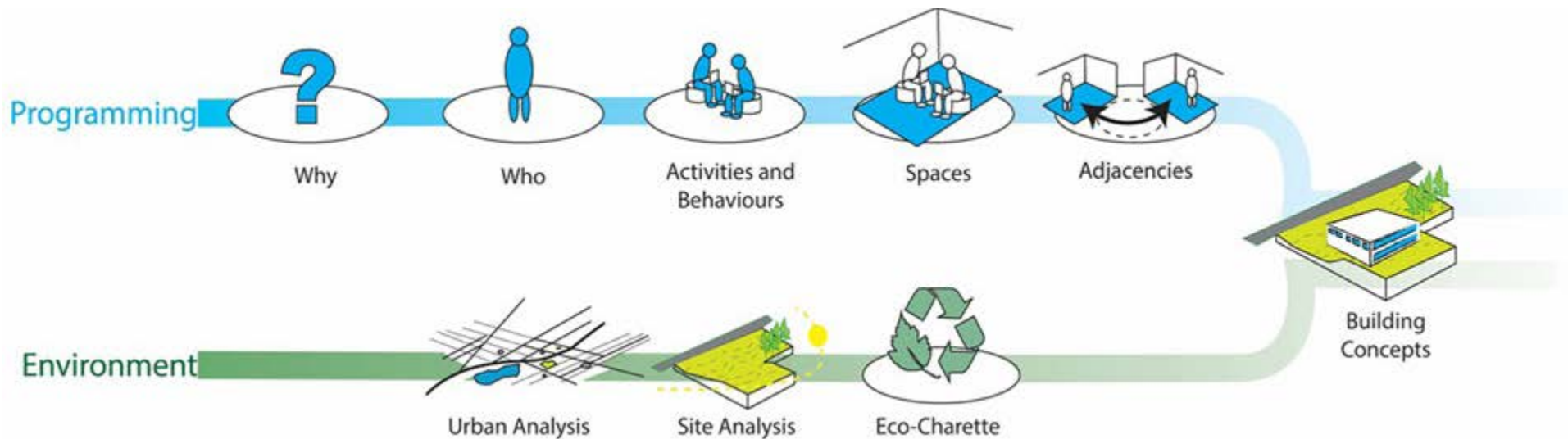
Value of Process and Community at Large

With the guiding principle, "Contribution to Community," the functional integrated of

Discovery High School with the community as a whole 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.

Unique to this facility, the "inquiry process" of Project-Based Learning was actually applied during the planning process to further identify what would be most relevant and important to the project-based learning experience.

Throughout this process, building flexibility, after hours use, zoning, flexibility of spaces, and surround amenities, such as the outdoor amphitheater with public access in mind. This past year, it was used for a state-wide safety and security conference and provided a backdrop of transparency balanced with flexibility.



Educational Environment

Educational Vision and Goals of the School

This new high school is centered educationally upon four fundamental Guiding Principles:

- **Personalized Learning that's Engaging, Active, and Inspiring**
- **Collaboratively-Designed Learning by Students and Teachers**
- **Flexible and Adaptable**
- **Contribution to Community**

Project-Based Learning - Students work in teams on projects that focus on solving authentic community/business problems. Students are often paired with community members that provide an authentic audience for the students' work.

Students are asked to learn and work in teams to create solutions for when they leave the Camas School District as citizens and employees. This school provides another way for students to experience the learning needed to prepare them for life after high school.

Blended Learning - There are integrated experiences where students self-monitor progress through a competency-based digital platform. The new school provides

an opportunity to explore digital platforms, standards-based grading, and competency-based progress that have implications for all schools.

Internship/Expedition - All students have work-based/community learning experiences through explorations they take during their school career. These experiences provide application of learning opportunities and a chance for students to learn from adults in the workplace.

Traditional Instruction – There is also direct instruction in a focused classroom setting for students to learn content fundamentals.

The new High School program centers on collaborative, integrated learning teams with a STEAM focus. Each student is assigned to a team comprised of 3 or 4 teachers who provide content support and facilitate learning focused on authentic community/industry problems. Schedules are flexible to include traditional classroom time, blended self-directed learning time, team time, and exploration time with opportunities to explore beyond the walls of the school. Across the school, students utilize common practices like design theory, research methods, inquiry cycles, and showcasing/demonstration of learning events. Learning

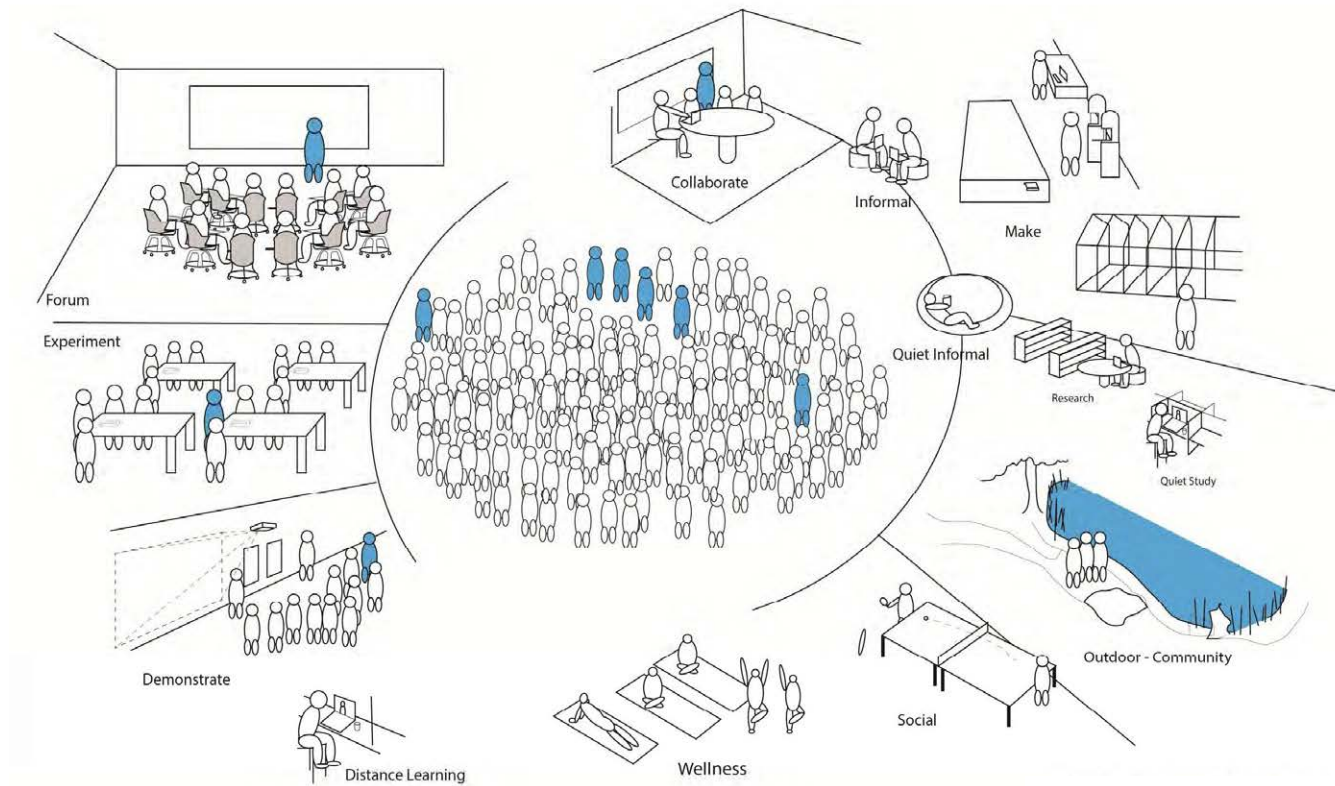
Teams develop unique identities that evolve based on student and teacher interest, but the school is connected by a common student-developed STEAM theme that unites them each school year. Students will make strong connections within and beyond the school with their peers, staff, and the community.

Beyond the requirement of additional space to house a growing student body, the school is needed to shift the way of thinking about secondary schools. In looking at current models for learning, there must also be a recognition that the world students are being prepared for is rapidly changing. Students will need to collaborate, create, design and problem-solve across disciplines more than they ever have before. Discovery High School gives the Camas School District a chance to build on its success and learn more about what it can become.

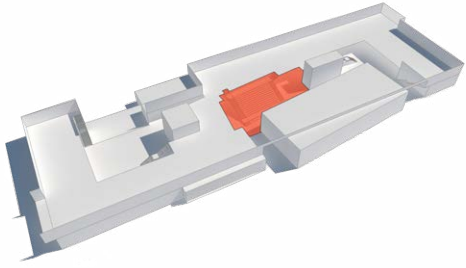
Project-based learning empowers students to go beyond standard curriculum creating lifelong learners. By offering real-world benefits, these programs turn theoretical practice into practical application and redefine school design standards.

How the Environment Supports a Variety of Learning and Teaching Styles

The driving culture of “building connections and relationships” is a key aspect of design and programmatic layout. The buildings was fundamentally designed to support a variety of learning behaviors. By designing for behavior, rather than the academic program, the design supports a student experience that is dynamic and engaging, while also ensuring that the building will be adaptable to new programs in the future.

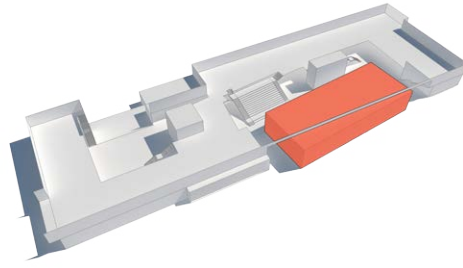


How the Environment is Adaptable and Flexible



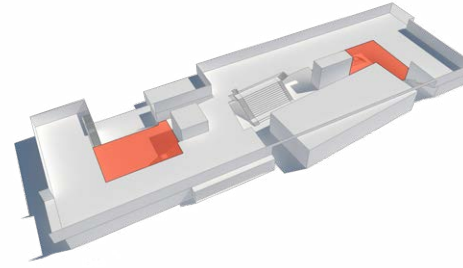
HUB

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.



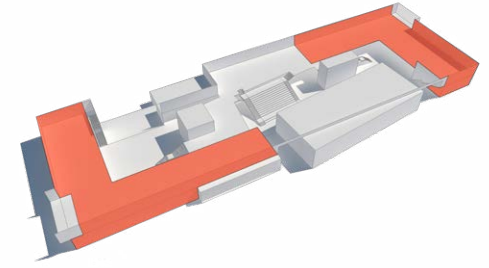
EXHIBITION

Flexible spaces requiring greater volume are located in the "Anomaly." Music, sports, curated exhibition and performance occur here with the possibility of opening up to the HUB.



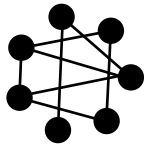
R+D COMMONS

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 and covered areas for learning and group activities.

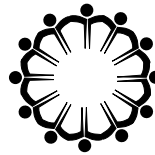


R+D PODS

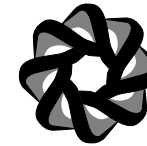
The core learning spaces of four suites (two stacked at each end) where 150 students spend the majority of the day. The suite includes team studios, classrooms, project labs and think tanks.



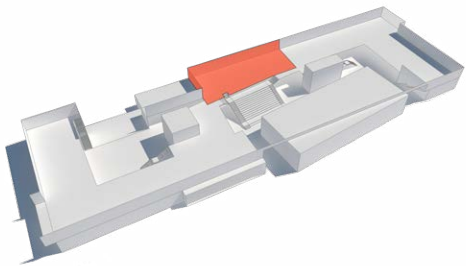
CONNECT



ENGAGE

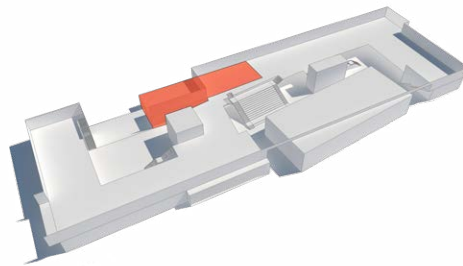


DISCOVER



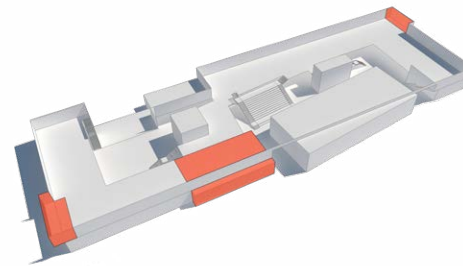
RESEARCH NODE

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



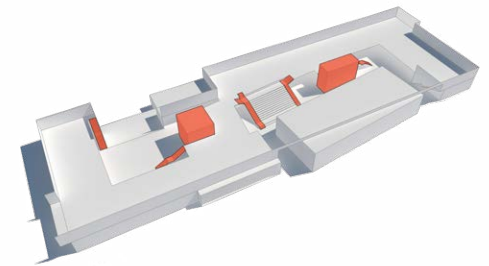
FAB LAB

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.



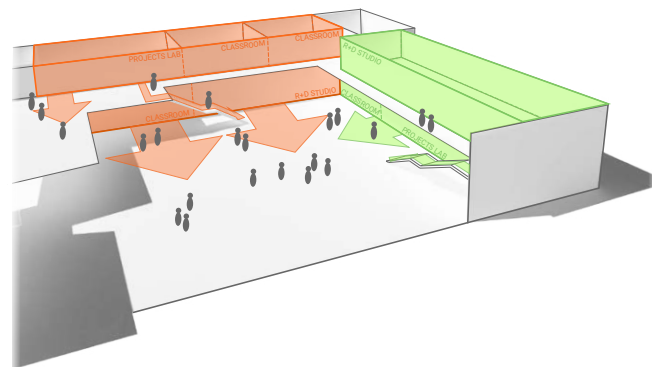
ADMIN

"Decentralized Administration" provides shared teacher collaboration space and career guidance. The main centralized administration space provides safety and security at the entry and includes front office space.

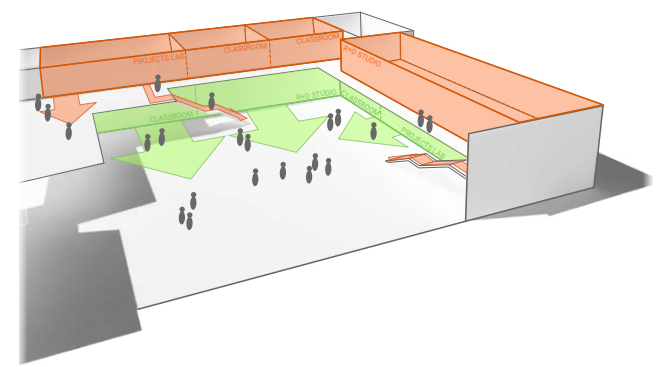


VERTICAL CIRCULATION

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



VERTICAL



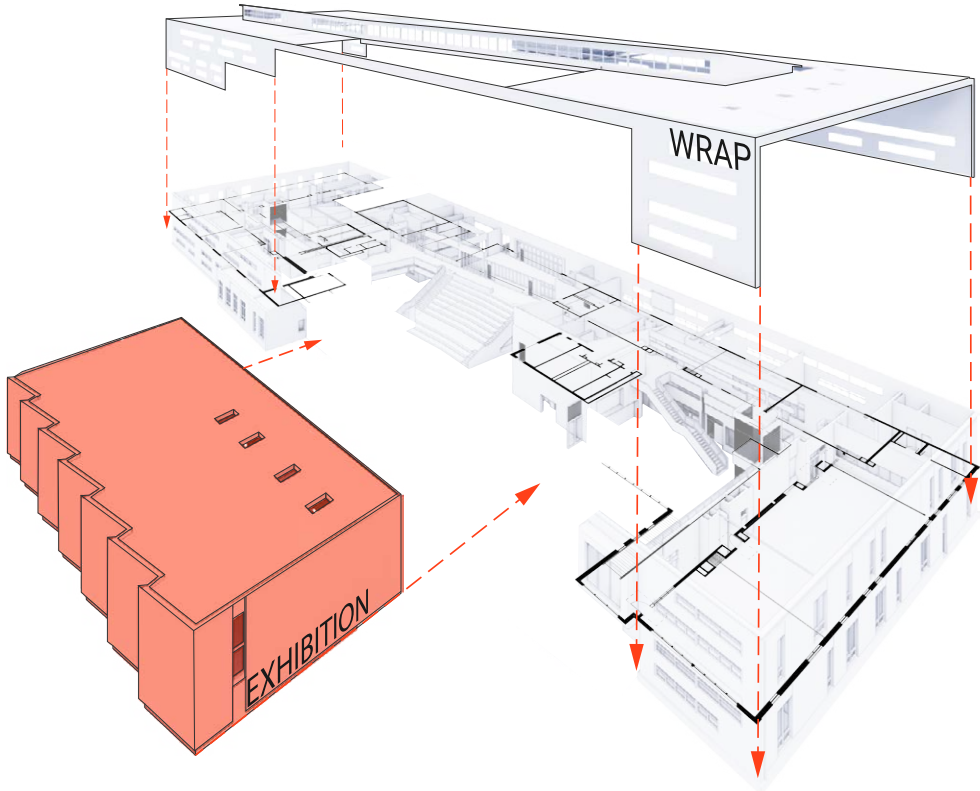
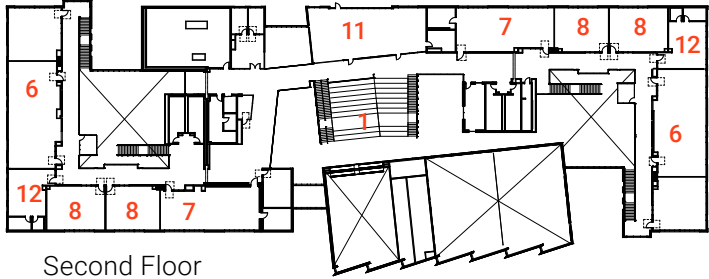
HORIZONTAL

SPATIAL AGILITY

Programmatic elements are organized to allow the building to be zoned by grade configuration, either vertically across two floors, or horizontally across a single floor.

MASSING PART I

The simple shape and steel structural system is based on the concept of a “Warehouse for Learning.” Housing student projects- the architecture recedes and student work is celebrated. The Flex Exhibition Space which includes programs requiring large volumes is expressed as an “anomaly” within the simple “Wrap.”

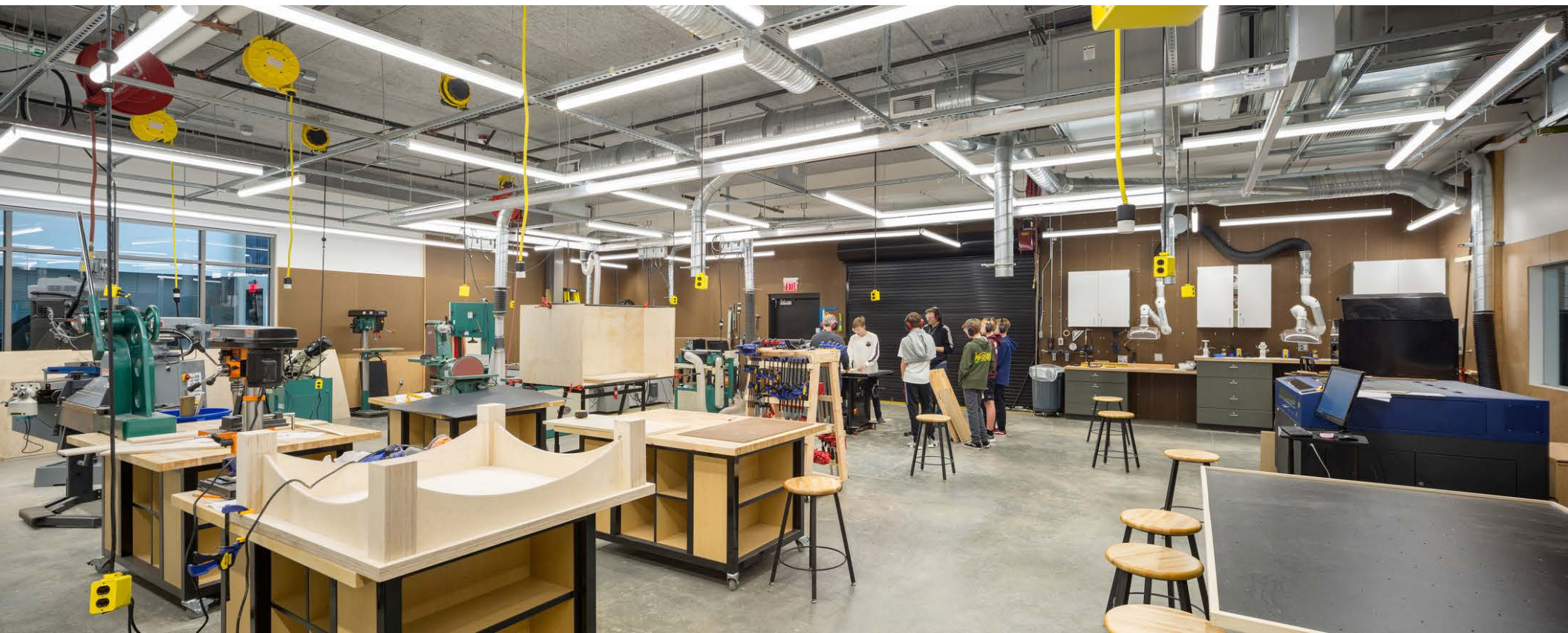
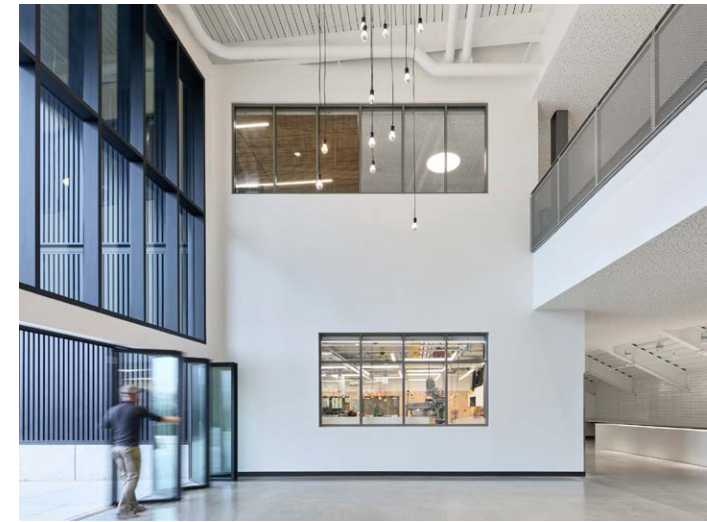


- 1. Hub 4. Admin 7. Projects Studio 10. Digital Controls
- 2. Flex Exhibit 5. R+D Commons 8. Classroom 11. Research Node
- 3. Gym 6. R+D Studio 9. Fab Lab 12. Mission Control

Physical Environment

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 & development pods form the 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.

This variety of space inspires and motivates through daylighting, materials, indoor/outdoor connections, and ample space for work on display.



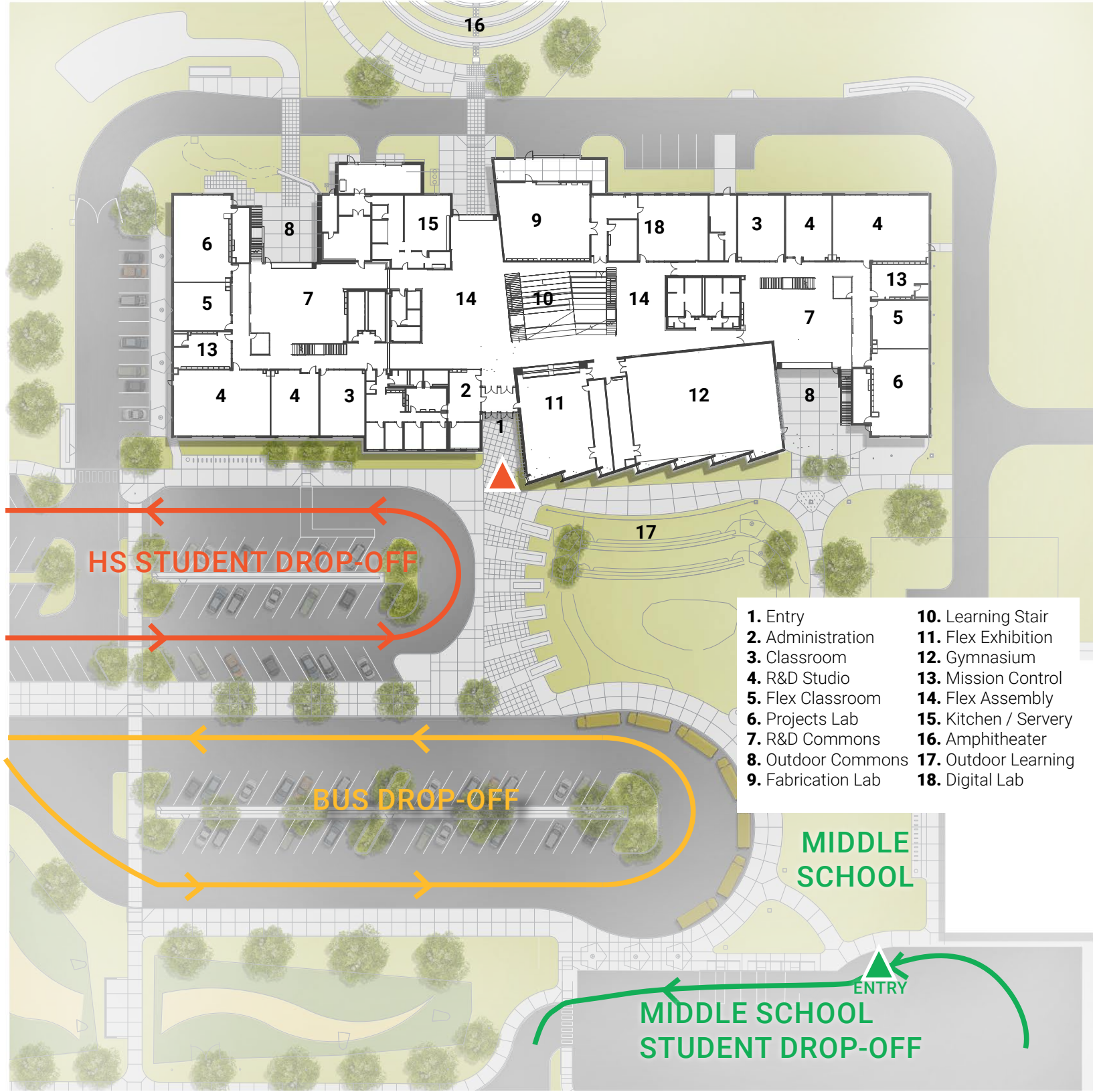


How the Facility Fits Within the Larger Context of the Community

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

**MIDDLE
SCHOOL**

**MIDDLE SCHOOL
STUDENT DROP-OFF**

HS STUDENT DROP-OFF

BUS DROP-OFF

ENTRY



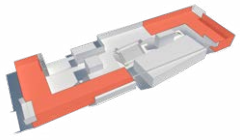
How the Project Inspires and Motivates

HUB

The HUB provides a flexible assembly space for presentations and allows the whole school to gather in one space. This space works in conjunction with the Flex Exhibition space to accommodate theatrical and performance events.

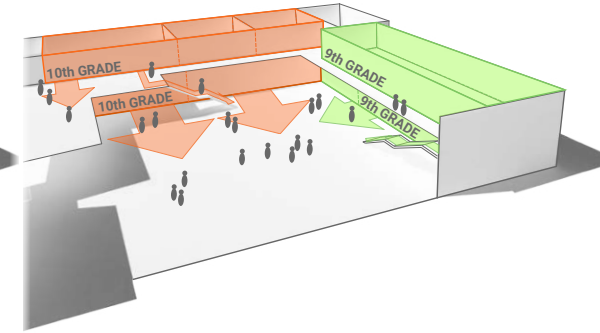
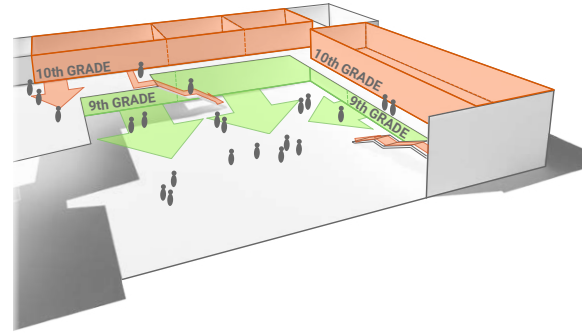
The centerpiece of the HUB is the learning stair which connects the cafe/research area on the second floor to the Flex Exhibition space on the first floor. Multi-modal seating provides spaces for gathering, learning, and dining.





R+D PODS

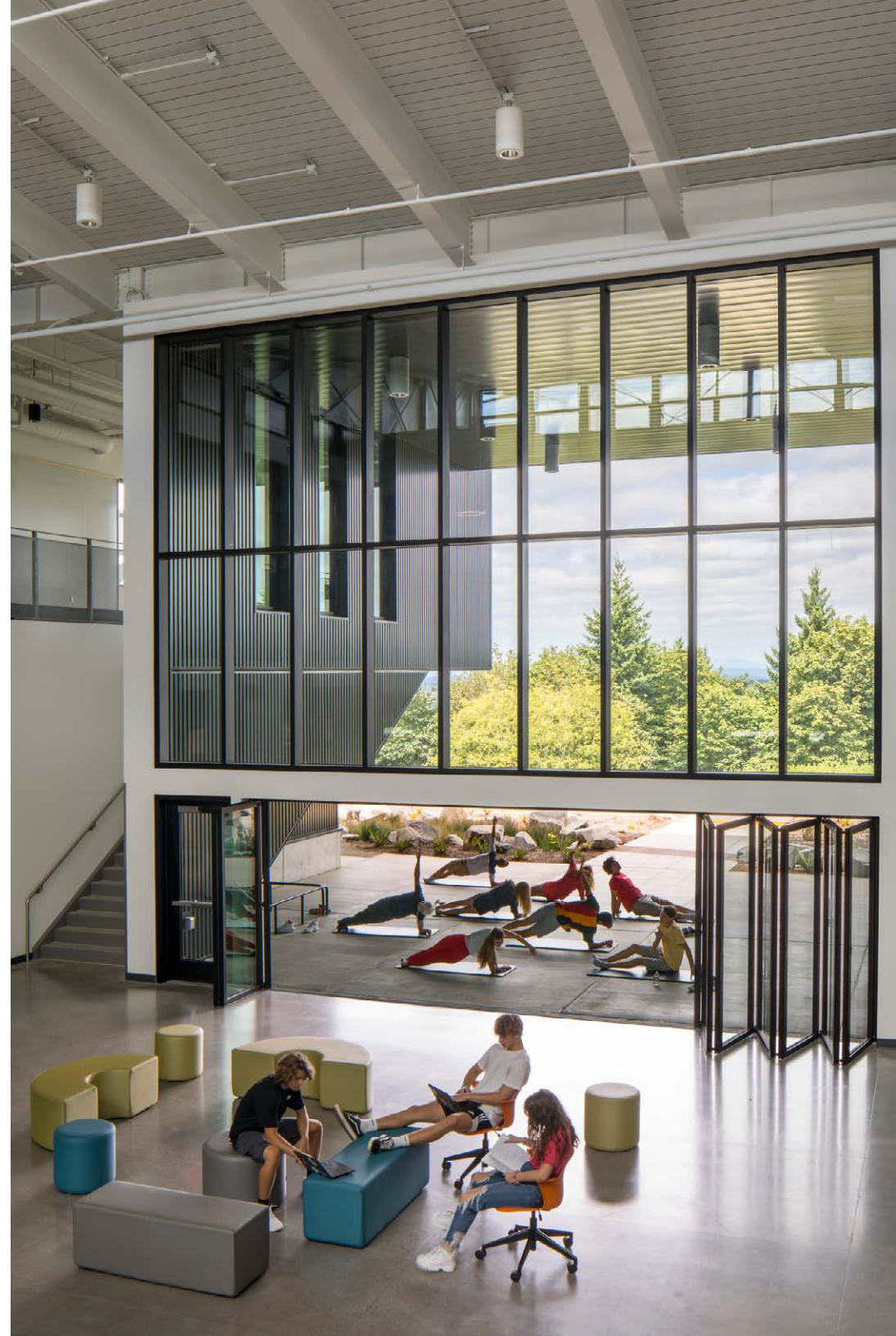
The R+D Pods are the core learning and research spaces and designed to provide grade level organizational agility. Programmatic elements are strategically stacked and mirrored to allow the building to be zoned by grade level either vertically across two floors, or horizontally across a single floor.

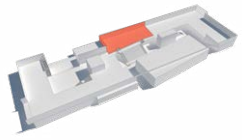




R+D COMMONS

The R+D Commons provide spatial connections within the stacked (or adjacent) R+D Pods. The double-height space is at the heart of the collaborative learning experience and provides flexible work environments with a direct connection to covered outdoor learning space.





RESEARCH

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.





EXHIBITION

The Exhibition Spaces occupy the “Anomaly” form at Discovery High School. The Flex Exhibition and adjacent Fitness area connect directly to the HUB and allow for students and staff to actively engage with both spaces separately or as one large space.

Daylighting and the expression of program elements within these spaces drove the form of the “Anomaly.”



Results of the Process and Project

Achieving Educational Goals and Objectives

What makes Discovery High School unique?

- Students taught by teaching teams
- Teaching teams have autonomy to use time flexibly
- Passion projects
- Standards-based-learning
- Collaboration and communication
- Students are EPIC - Entrepreneurs, Producers, Innovators, and Contributors

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. **As an example of sustainability, Discovery High School is thoughtfully integrated with cost-effective, energy-efficient systems to meet the 2030 Challenge.** The building's orientation along an East-West axis reduces sun exposure, minimizes heat gain, and captures natural daylight with appropriately placed operable windows, continuous clerestory, and skylights.

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 gymnasium, 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 will be designed with 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. However, the open, collaborative culture of the school's educational program will provide design challenges.

Unintended Results and Achievements

The process of designing Discovery High School at the same time as creating the educational plan and curriculum structure allowed for the core team of educators and administration to truly craft and push the boundaries of a non-traditional learning environment.

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.

In light of COVID-19, the school will likely benefit from unintended adaptable design decisions including the innate 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.





