

Replacing inadequate facilities and opening doors to the larger community, the new Fife STEAM Center for Innovation reconciles present need and future growth for residents in the Puyallup basin. The school is a place of innovation that embodies the District's Four C's — Collaboration, Communication, Critical Thinking, and Creativity — into a unified Learning Center. The learning environment is open and available for all students and the spaces are invitingly provocative. Student activities-exhilarating, stimulating, and alluring, — are made visible to inspire others. White boards and digital screens are present in the shared spaces to support collaboration alongside soft seating that invites relaxation and conversation. A diverse collection of programs nest below the enclosing structure, offering an intimate

connection between spaces and allowing inhabitants to be inspired by the activities of others.

Fife School District presented a need and a vision in its long-range plan to rebuild the ageing campus. At its core was a commitment to re-imagine high school education by closely aligning curriculum to the world Fife students would be entering.

The most immediate need was to replace inadequate art and science facilities in the existing high school and provide a permanent home for programs being held in portables on campus or at the District Administration building. Consolidating these programs presented an opportunity to explore how a new kind of learning environment at Fife High School might support more contemporary approaches to teaching and learning.

In addition to replacement, the facility gave educators a chance to rehome and represent several of the core components of STEAM education. The District asked its community to support the STEAM Center of Innovation as the first phase of a full campus redevelopment. Funding was approved by voters in February 2018 and the project commenced in the Spring of 2019.

The new Fife STEAM Center of Innovation co-locates historically independent programs within a single Learning Center and provides much needed social spaces for the wider school community. With a focus on whole-student wellbeing, the facility includes spaces supporting social and emotional learning outside of formal classrooms, where students can be teenagers and get together with friends to laugh, chat, and discuss the issues important in their lives.



Executive Summary



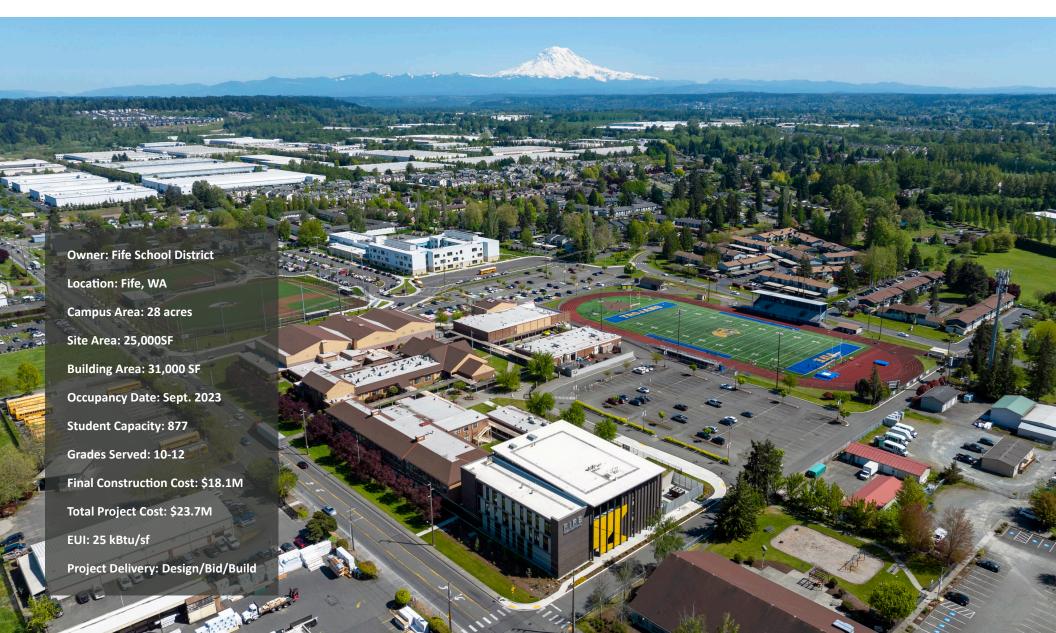
Scope of Work and Budget

Fife High School, founded in 1899, is the only high school in the Fife School District. Generations of families have attended this school, passing through the campus comprised of buildings from nearly every decade in the last century.

The design team worked with district and high school staff members to determine how the new facility could

best support their educational vision, District mission, and STEAM curriculum. Our team developed a complete site master plan to determine the best location for the STEAM Center of Innovation in light of plans for a future Fife High School replacement. The Northwest corner of the site provided the building a prominent position, showcasing the first phase of redevelopment while minimizing disruption to school operations.

The new building houses 11 teaching stations (consisting of (4) Science Labs, (2) Math classrooms, a 3D Art Studio, a Graphic Arts Lab, a Robotics Lab, a Media Arts Editing and Production Suite and a Business Lab), collaboration and social spaces, and a central mechanical plant designed to eventually serve the entire campus.





Live Like the Mountain is Out

The Pacific Northwest has rightfully earned the reputation as one of the wettest regions in the continental US, but it is a badge we wear with honor. As the old joke goes "How do you spot the tourists in the Northwest? ... They're the ones with the umbrellas".

The microclimate in Puget Sound is heavily influenced by the surrounding mountains. The Olympics to the west, and extending south to the Willapa Hills, tend to protect the Puget Sound basin from the full force of storms moving inland from the Pacific Ocean while The Cascades to the east act as a barrier, holding the moist marine air in the region leading to a pretty agreeable weather pattern- a little rain, not too hot, not too cold.

This 'goldilocks' climate tends to make us somewhat nonchalant about the weather but, averaging fewer than 160 days of sunshine annually has led to a popular bumper sticker, "Live Like the Mountain is Out".

Mt. Rainier was renamed in 1890 but to the many and diverse communities of indigenous peoples who have made their home in the shadow of the mountain since time immemorial it has many names. Tahoma, a common anglicized version translates as 'The Mother of All Waters' and refers to the glaciers on the slopes of this active volcano which feed the tributaries of the Puyallup River, which itself, flows to Commencement Bay within a watershed carved by a series of lahars from eruptions some 5,000 years ago. The glacial meltwaters, laden with silt and gravel, cause the river to meander which,

historically, resulted in frequent flooding and extensive floodplain wetlands, providing a rich and complex habitat for fish and other animals. The fertile soils also attracted European, Japanese, and Chinese settlers adding a rich mix of culture and history which is still evident today. The farmlands supported a thriving market gardening industry producing flowers and vegetables. Notably, the Puyallup River valley, due to its mild climate, produces blooms 2-3 weeks earlier than other areas and as a result, in the early 20th century, quickly became the nations 'bulb basket' producing 50% of the nation's daffodil bulbs. The Port of Tacoma, in partnership with Port of Seattle is the 3rd largest cargo gateway in the United States and supports more than 40,000 jobs across Pierce County.



Community: History + Legacy

The City of Fife has no discernible 'downtown' hub. The high school is located where one might expect to find the city center and although it is adjacent to the city's municipal campus, the surrounding area almost entirely consists of automotive dealerships and industrial manufacturing and distribution units. Residential neighborhoods, (highlighted in purple below) and thus, student catchment lies predominantly to the northeast of the downtown area. The high school campus, therefore, is the de facto heart of the city and is regarded as such by the community.

Fife High School sits in the lower Puyallup basin, the ancestral home of the Puyallup people. It is the only high school within this small school district and some of the current cohorts of students are the 3rd or 4th generation in their families attending Fife High School. This generational legacy is what defines the Fife School District and the community that supports it.

North West Tacoma Fife Heights Milton Waller Puyallup

Community: Spirit + Pride

Rich alluvial soils within the Puyallup basin supported a thriving agricultural economy, evident in the culture and traditions at Fife High School today. This agricultural past is celebrated in the annual Daffodil Parade, a regional festival and leadership program, where schools and local businesses participate in a Grand Floral Parade and a year-long royalty program to select a festival queen from one of the 24 area high schools. Each year, the Royal Court spend thousands of hours promoting education, community pride and volunteerism across Pierce County.

Specific to Fife High School, the Cabbage Patch Olympics, marked by energetic camaraderie and friendly competition, are an ongoing tribute to the history and legacy of the past. Like all communities, shared experiences create school spirit and pride. One of the events exemplifying this is 'Shulapalooza' which began with a group of students gathering to support a much-loved teacher facing medical challenges. Shulapalooza has grown to become an annual community celebration showcasing the talents of students and raising money for local charities.



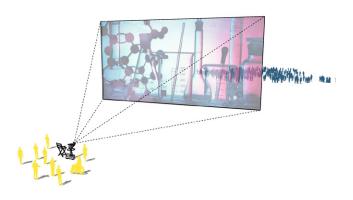
Community: Amplify + Project

Until the redevelopment of the entire school campus is complete, the STEAM Center will enjoy the unique challenge of serving as a bridge between the old school buildings and the future Fife High School.

Employing an analogy from the world of media arts we began to describe this aspect of a beacon in terms of Amplify + Project. To celebrate the successes of the program we amplify the achievements of students back to the community and in order to support the open and accessible nature of the building itself we want to project its resources to all students in the wider school campus.

It is from that community that our project goals are derived. From conversations with community stakeholders the words are intentionally paired in binary opposition. In architectural terms, that contrast, is actually what binds the terms together. One should not exist without the other. A Yin and Yang relationship exists. A balance.

These project goals, expressed as a narrative conceptual strategy, guided us through the decision-making process and acted as a check and balance system to always ensure that both sides of the equation were satisfied.

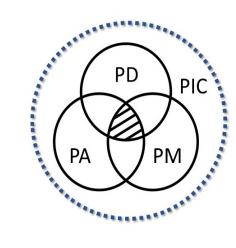


Stakeholders: Getting to Know Each Other

In any relationship, trust and transparency are paramount. In the design process, often with expedited schedules, it is even more critical to establish a basis for trust and transparency at the outset. As architects, we do our best work when we can collaborate with a fully engaged and trusting group of stakeholders. We, of course, know our own role in the process but it would be remiss to assume that everyone understands just exactly what it is that an architect does. In fact, the design process itself can be somewhat of an opaque journey for many.

We describe a 'three-legged stool' structure of core design team members- Project Designer, Project Architect, and Project Manager- each with specific roles and responsibilities throughout the process. This structure is overseen by a Principal in Charge who carries overall responsibility for the project.

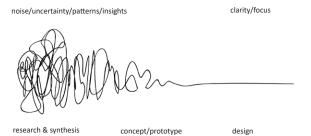
We also try to outline the nature of anticipated activities during different phases of the project and how the stakeholders, rather than passive observers, can actively help guide us through the design process to achieve the best outcomes.

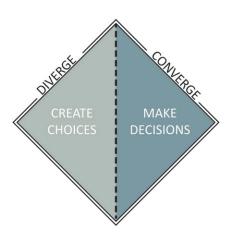


Stakeholders: In Control

There are a number of commonly used diagrams attempting to describe the design process. Often, they consist of a 'squiggly' line eventually flattening out towards the end of the process. This version says, "it's going to get messy but just bear with us, we'll get there in the end." It's in the squiggly lines where the 'creativity' is supposed to happen. That approach contains little transparency and requires a great deal of trust from the stakeholders.

We believe that within a collaborative team the design process is much more straightforward while no less creative. At each step we ask our team to diverge, cast the net wide and bring every idea to the conversation. We then converge and discuss the findings in detail before moving to the next iteration. Together, we ask our design teams to create choices and make decisions.

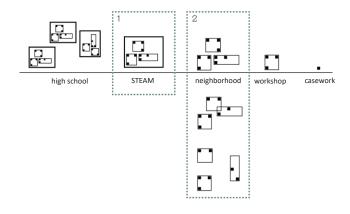




Stakeholders: Staying Focused

It is human nature, when asked to envision a perfect environment, to begin by describing all of the elements of one's current environment that are less than perfect. Staff and Students are no different in this respect and, when asked, will reel off a list of failings – not enough storage, not enough outlets, no place to hang out – rather than clearing their mind and truly beginning to imagine the possibilities a project of this nature might deliver.

We, as architects, communicate in a visual language and so developed a series of diagrams at the outset of the project to reassure stakeholders that we understood their concerns and would address each of them in detail at the appropriate time but that we first wanted to cast off the limitations of personal experiences and, as a group, spend time exploring the potential for real change. At the outset of each meeting, we highlighted the particular scale around which that stage of the conversation would focus. By having all scales of the project visible and present at every meeting stakeholders could see a path to resolving their own personal concerns but were able to focus on the larger questions at hand.



STEAM in Everyday Objects

Thoughtful design processes seek a deeper understanding than a simple tabulation of program teaching spaces. Our design team strove to understand the pedagogy behind STEAM, and how architecture can support that unique approach to learning.

As a mnemonic, STEAM clearly aids our brains in remembering the core subjects but, for anyone unfamiliar with the term, the abbreviation omits the fundamental pedagogical principles of inquiry, exploration, and discovery.

STEAM is how we interact and engage with the real world. It is less about Science, Technology, Engineering, Art, and Math, and more about an overarching approach to learning. From our earliest learning activities we question, explore, and discover to help us solve problems. Children develop skills and build theories about the world around them through play; as they age that play becomes more formalized, but no less fun. STEAM is the acknowledgement that the knowledge gained in a lived experience of learning is much richer than the act of simply digesting and recalling facts.

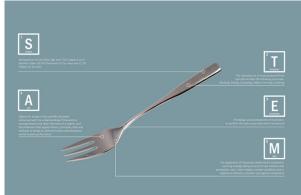
The Soviet Union launch of Sputnik into near earth orbit in 1957 galvanized the US government to enact reforms in science and engineering education so that the nation could regain technological ground it appeared to have lost to its Soviet rival. It wasn't until the early 2000's however that the term STEM was first coined by Judith Ramalay, while director of the National Science Foundation. STEM was a promotional concept singularly focused on encouraging students to pursue careers in the scientific fields.

In recent years, the addition of Art to form STEAM marked a foundational shift in the understanding of the relationship between the individual scientific disciplines. Introducing the A in STEAM adds a *Why* to the *How*. Where STEM seeks out analytical thinkers, STEAM encourages curiosity and creative thinking.





In an effort to demystify the term, we developed a series of images that represented "STEAM in everyday objects." These images highlight the fact that STEAM exists all around us and has been present long before someone thought to create the acronym. It is through these ubiquitous objects that we use every day, rarely giving them a second thought, that we highlight the importance of Collaboration, Communication, Critical



Thinking, and Creativity. Even these common objects were subjected to the same rigors of thoughtful design to come into being. A pedagogy, and a complimentary learning environment, that equips students to approach their life and the world around them with a curious and inquisitive nature is one that invites success and fulfilment.

STEAM in Everyday Life

Herman Hertzberger described the people who would occupy his buildings as 'inhabitants' as opposed to mere 'users' and created spaces where those inhabitants could be inspired by the activities of others. This idea is central to the organizational strategy at STEAM and, conceptually, we employ the notion of a Mobius Strip, a surface with one continuous side – no 'inside' or 'outside', to arrange spaces that act together as one homogenous volume. This is the genesis of the stack.

The Fife High School STEAM Center of Innovation is a place of discovery that hopes to instill an urge to create within each inhabitant. The learning environment is open and available for all students and the spaces are fascinating and invitingly provocative. The activities-exhilarating, stimulating, and charged, serve, by their visibility, to inspire others.

STEAM is so much more than the individual subjects that contribute to forming the acronym. STEAM is about cross-pollination and an understanding of how each of those subjects exists within the others. A true understanding of this relationship provides a pathway to further discovery.

The intent with this diagram was to reassure the educators that individual programs remain intact and that overlaps already exist between subjects.

The Venn diagram articulates this intent clearly and further suggests that a STEAM pedagogy emerges as the pre-existing overlaps become activated.

There comes a time in the design process where the project comes alive for those involved. It is a moment of understanding and realization. This often occurs at different times for individuals depending on their

personal perspective and ambitions for the project outcomes. On rare occasions, however, this moment arrives as a collective consciousness or awakening to the potential that a project holds.

For this project, that moment came during a simple exercise of arranging and rearranging card boxes representing the program pieces with the purpose of establishing the most appropriate adjacencies and relationships. This was a fun activity that engendered engagement. As the Executive Team members took turns to stack the boxes, the group became animated in their discussions about how particular placements added to the whole and imagining the benefits of various configurations. The outcome of this exercise proved to be much more foundational than simply deciding which rooms should be beside each other. As we played around with multiple configurations in real time there was a visceral excitement in the room. At that moment everyone realized that they were contributing to something that was going to be quite special.







Student Engagement Workshop

The student population at Fife High School is as diverse in their individuality and interests as they are in their cultural background and outlook. Finding commonalities within this group in the time we had with the student body was key to gaining meaningful outcomes. We began by talking about our own excitement, as designers, embarking on this project and the potential it held. We told the students that within a very short time we would be constantly working through ideas in our head, waking up ridiculously early and rushing into the office to work through the details; prepared to "kick the doors in" to get back to our tools. We asked students to imagine what sort of school would make them want to "kick the doors in" to get back to learning.





Student Experience Pyramid

To prime students to think beyond their existing scholastic experiences our team proposed a scenario in which students asked their teacher- What is Sustainability?

We created an adapted hierarchy of needs that described possible response types a teacher might provide and correlated those within each level of the hierarchy. At 'Level 1' a teacher furnishes information needed to find an answer by directing the student to resources or research that is useful. The teacher helps to resolve the student's needs at 'Level 3' by possibly creating a project-based curriculum around the question and involving the whole class. At the apex of 'Level 5' the teacher is working to make the student better, safer, and more powerful by providing agency and freedom to create and explore their question through their own unique interests and learning styles.

Unboxing your STEAM Center

Having defined the levels of engagement, we discussed aspects of a new Learning Environment that best support each student's desire to operate at a 'Level 5' and explored how space might allow students to lead instruction as their teachers came alongside them as guides. To help explore those concepts our team shared an 'Unboxing' video, an internet phenomenon where individuals film their anticipation and excitement while opening a new product to online viewers, with students and asked them to image themselves 'Unboxing' their new school. We then asked them to reflect on the following questions:

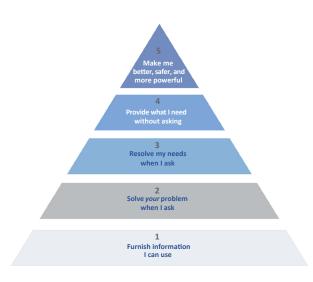
What does your STEAM Center look like?

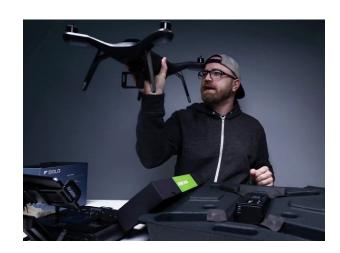
Where does the 'magic' happen?

Who is with you and what are you doing?

What are you able to do here that you couldn't do in a regular school?

Why is this the best school in the world?







Place

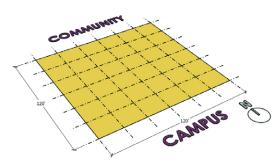
One of the main challenges facing the current High School campus is a lack of areas for students to congregate outside of direct instructional spaces. This project presented an opportunity to create a new kind of place for students; somewhere they could socialize, study independently, connect with adults outside of the classroom, and generally feel that they belong on campus.

To the South and East, the STEAM Center is visibly open and transparent offering a welcoming invitation to the staff and students of Fife High School.

To the North and West, the building presents a more formal composition acknowledging the support of the community and signaling that their children are in good hands. The North facade is relatively transparent providing the community glimpses of the learning activities within.

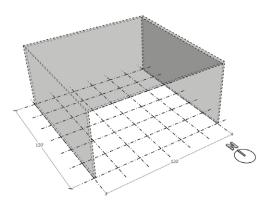
On approach from the South, inhabitants are presented with an open and inviting transparent facade which is protected from the glare of the sun by a substantial roof overhang and brightly colored horizontal shades. A subtle entrance is marked by an aperture in a yellow metal screen adorning the projecting box of the vestibule and Art Studio.

The plaza provides an area for students to congregate and socialize when not in classes. It has also been developed to support art students. This southern facade and plaza will form a connection with the future high school.



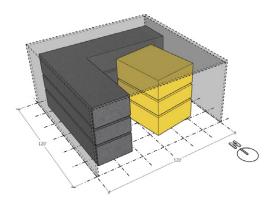






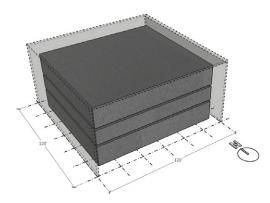
Enclose

The enclosure, expressed with a simple, low slope shed roof supported on exposed structure, gathers the diversity of program spaces all under one protective envelope. A variety of architectural operations are applied to individual program spaces to accentuate the internal configuration but there is equity in how the roof provides homogeneous shelter and protection.



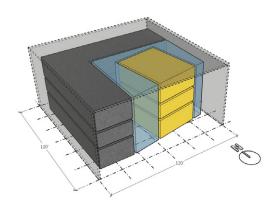
Rotate

A 'Maker Box' emerges as the organizing element around which the rest of the program spaces are gathered. The spaces within the 'Maker Box' are no more important than any other learning setting but are employed in an act of large scale wayfinding. Movement through the building and between levels is arranged around this object and is readily apparent both from within and on approach to the building.



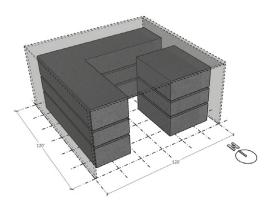
Nest

All of the program spaces, both formal and informal, are nested in a stack below the enclosing structure. This multi level stack offers an intimacy between spaces and an adjacency that allows inhabitants to share, both passively and activley, in the activities of others.



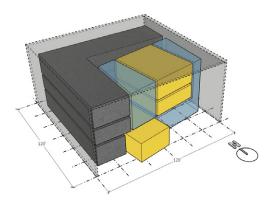
Volume

Voids formed as a result of the defining operations become the creative heart of the building. Within these spaces, staff and students are released from the rigors of curriculum and can adjust focus and enjoy time in robust debate and the shared exploration of ideas.



Define

The stack is further defined as spaces that support informal learning, including student wellbeing and social and emotional learning, unite around a consolidated building core that also defines and organizes the formal classrooms.



Separate

Atrium spaces offer the opportunity to flood the deeper recesses of a building with natural daylight but that often invokes technically challenging compliant solutions.

To avoid that situation we have employed a creative strategy which avoids a technical atrium condition while retaining the feel of a single, multi level, interconnected space.

Floor Plans

A rotated 'Maker Box' (yellow) is surrounded by complimentary learning settings and support accommodation in a simple 'L' configuration. This creates pockets of shared activity spaces and allows the stairs to act as a prominent wayfinding element across all three floors.

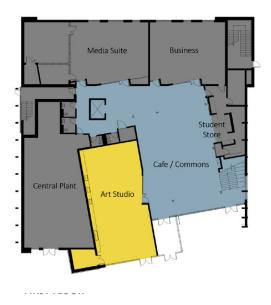
On Level 1, the café, bounded by Art, Business and the Media Suite, is the focal point of the entry sequence.

The Student Store serves as to showcase students work, displaying merchandise produced in the Art, Graphic Arts, and Business programs.

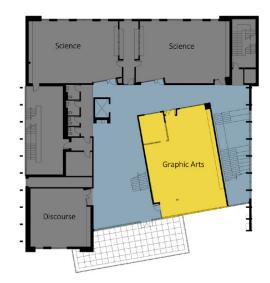
On Level 2 the Graphic Arts and a UV safe room, integral to the screen-printing process, occupy the 'Maker Box'. A pair of science labs with a shared common prep area and a Discourse space completes the 'L' providing diverse teaching spaces.

On Level 3 Robotics fills the 'Maker Box'. Science labs stack above labs on the second floor to consolidate the associated infrastructure.

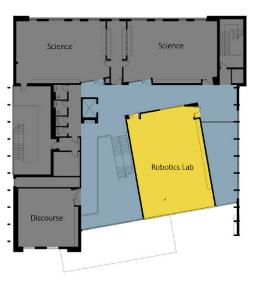
Inclusive Restrooms are provided for all students, marking a progressive solution to an historically challenging space within High Schools that are responsive to current conversations regarding accessibility and gender identity.



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR

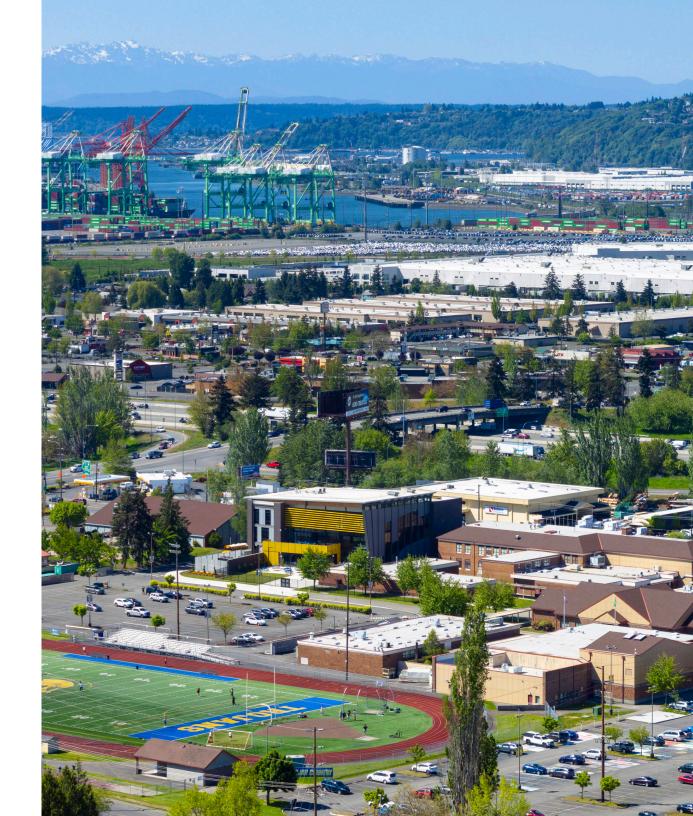
A Beacon of the Future of Education in Fife

The STEAM Center of Innovation is the first step in the eventual redevelopment of the Fife High School campus. Fife Public Schools anticipated, with the support of their community, fully replacing the existing Fife High School within the next decade. Until then, the STEAM Center has the unique challenge of serving as a bridge between the old campus and the future of Fife High School.

The new building actively portrays to the community what the future of Fife High School could look like. The face presented to the community conveys the current high quality of education and sets a standard for the new Fife High School that will eventually stand alongside this building.

From a student's perspective, within the building, the classrooms frame and envelop a series of double height spaces flooded with diffused natural daylight. These liminal spaces are as important, if not more so, than the formal learning settings gathered around the core. This arrangement of classrooms attempts to leverage those in-between spaces so that, wherever they are in the building, students remain aware of and have a connection to every other space and activity that is present.

At Fife STEAM, the classroom doesn't stop at the door. The opportunity to bring learning activities out into the open is to invite true collaboration and the potential to be inspired by the work of others is ever present.





Learning Environment + Curriculum

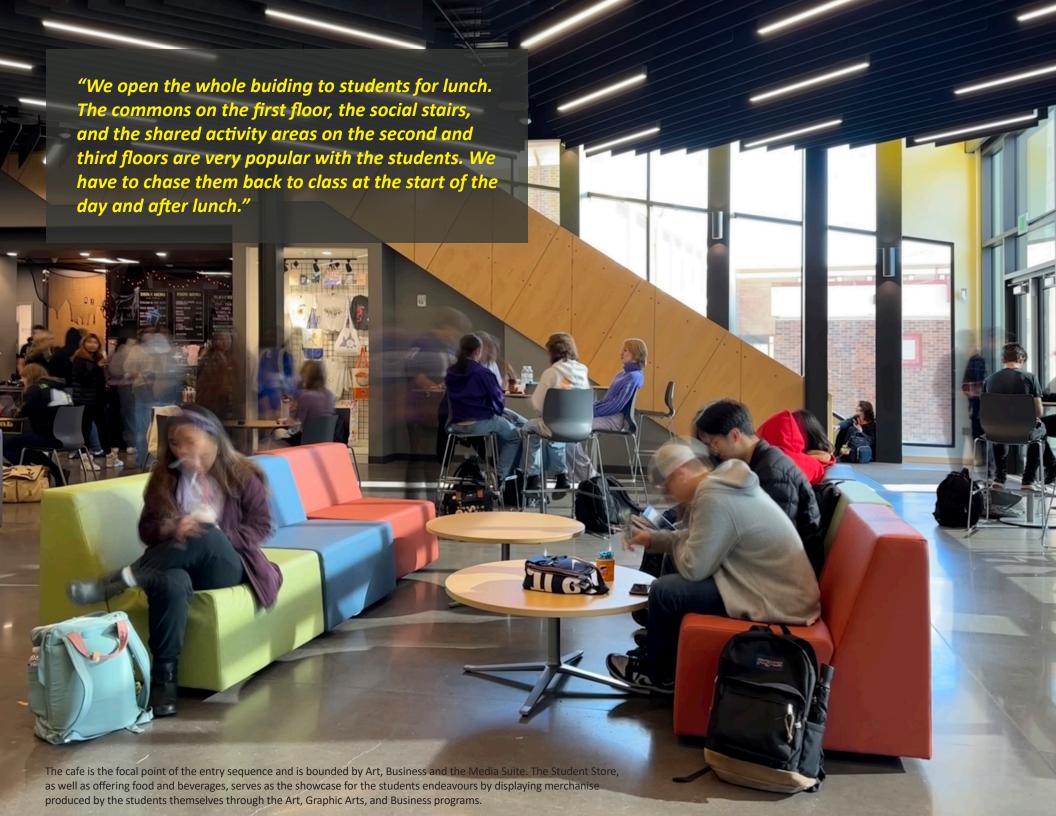
The STEAM Center of Innovation is a place for making. Students make decisions, they make discoveries, and they make ideas come to life. The building expresses the process of active learning in exposed systems and structures.

The STEAM program at Fife High School is designed to engage students in project-based, experiential learning. It challenges them to develop innovative solutions to real-world problems through inquiry, dialogue, and critical thinking. This approach to teaching and learning is expressed through a diverse array of learning settings open and available to all students. The curriculum encourages students to generate questions and identify problems and supports them as they consider, investigate, and evaluate those problems. It inspires them to become capable producers, creators, and communicators.

















On approach from the South, inhabitants are presented with an open and inviting transparent facade which is protected from the glare of the sun by a substantial roof overhang and brightly colored horizontal ribs. A subtle entrance is marked by an aperture in a similarly colored metal screen which adorns the projecting box of the vestibule and Art Studio.

The plaza to the south of the building provides an area for students to congregate and socialize when not in formal classes. It has also been developed to allow art students to avail themselves of the outdoors for specific activities. This southern, transparent facade and plaza will form a connection with the future high school.





Construction began in early 2021 with an anticipated duration of 12 months. Progress was almost immediately impacted by the effects Covid-19 had on the labor and supply chain. Contractors, district staff, and the design team persevered through constant challenges, finally achieving substantial completion in mid 2023, over a year behind schedule.

Despite this delay, at no time did any of the stakeholders lose faith in the process. They were so invested in the prospect that the project would realize positive benefits for the learning community at Fife High School that their enthusiasm and anticipation carried them through the stiffest of challenges.

Since opening for the beginning of the 2023-24 academic year the project has been welcomed and loved by staff and students alike. School leadership is reminded daily of just how much the new facility has improved the learning environment at Fife High School as demonstrated by the selection of accolades highlighted below:

"I've noticed since implementing the new space students are able to engage with their peers in a far more dynamic and substantial process of learning."

"It seems that seeing this space as collegiate encourages the students to apply themselves with even more rigor than before."

"This space has transformed my teaching to give me the structure I need to create a powerful classroom community with my students."

"The STEAM Center has brought an immense light into the students and community."

"The entire population at Fife High School enjoy the amenities and communal spaces of the STEAM Center such as, single-occupancy restrooms, vast amounts of seating for time out of classes, and more!"

"The building has brought a new perspective of education for myself and many of my peers. The building has a unique factor that allows students and staff to have more of a comfortable learning environment. This allows for healthy and fun areas for all students."



Open and operational for a little over a year now, it is fascinating to see first-hand how the various groups are occupying and utilizing the spaces within the new facility. Unsurprisingly, the students, curious and inquisitive about the world around them, have immediately colonized the spaces and are comfortable rearranging the mobile furniture and soft seating to suit their specific needs; opening the circle to welcome a larger social group or pulling a few chairs to the side when a more discreet conversation is necessary.

As adults, it is natural and common to seek comfort in familiarity and, in stark contrast with the students, teachers, particularly those who, over many years, developed survival instincts and a necessary sense of independence, as they taught in poorly ventilated, windowless portables and inadequate classrooms, have approached the new facility with a little more caution. Like bears emerging from a long winter hibernation, the educators are slowly exploring their new learning environment with some trepidation. Their new spacious classrooms, laden with modern digital tools and flooded with natural daylight provide a familiar and comfortable refuge from which they can observe the shared activity spaces beyond the safety of their transparent classroom walls. A handful of teachers are only now beginning to explore the spaces outside their formal teaching settings for instructional activities. It will likely be the students who drive the demand for more diverse and educational use of these spaces.

We were told recently, while conducting a Post Occupancy Evaluation, that "every inch of the building is used" and "it is the place to be on campus". An unintended consequence of this huge popularity is some congestion on the stairs at busy periods. The staff, however, view this as a minor and temporary inconvenience and one that will be remedied once multiple and similar spaces are created as part of the campus wide redevelopment.



The success of the concepts and the realization of the ideas in the eventual design, sparked a desire for more of this type of learning environment within the design of the new high school to replace the current campus. The STEAM Center model was replicated to form multiple collaborative learning communities within the larger Fife High School.

Design of the new high school is underway, creating a more cohesive facility to replace the disjointed aging campus. The principles explored in the Fife STEAM Center for Innovation have formed the basis for a comprehensive high school to serve the Fife community for generations yet to come.