2022 JAMES D. MacCONNELL AWARD

DEARBORN 6-12 STEM / EARLY COLLEGE ACADEMY

The City of Boston, MA

EXECUTIVE SUMMARY

The Dearborn 6-12 STEM Academy is a 128,000 sf City of Boston Public Middle/High School purpose-built from the ground up to inspire and support STEM (Science, Technology, Engineering, and Mathematics) learning and teaching. It represents a building typology as different from a conventional school as a library is from a police station. The Dearborn is also the first new school project to be undertaken by the City of Boston in over two decades. It represents a renewed commitment to serving the underprivileged Roxbury neighborhood community, youth, and future. The project was initiated and stewarded by the community itself in many ways, prodding the City government to action.

STEM education is greater than the sum of its component disciplines. It is an educational culture based on student-driven interdisciplinary exploration where the building environment plays no less than a central role. In short, through the interpenetration of spaces, transparency, blurred boundaries between public and private, and the ubiquity of collaborative learning resources, the students are enabled to inspire one another to excel. Their collaborative work is interactively displayed in its completion and the excitement of research and discovery.

The building is designed to shape the collaborative, student-driven learning experience that it houses. At one with its dense site at the center of one of Boston's most deserving, aspiring communities, the Dearborn reaches out to the surrounding city, community and student participants, drawing them into an atrium vortex of mutually visible, inspirational activity. The entirety of the building's program is therefore visible to itself with student achievement shared and celebrated.

Social Equity is the project's Central Concept! By building its first new public school in 20 years and the region's first and most pro-grammatically and technically advanced STEM school for this neighborhood, the City of Boston, with support from the state, intends to level the playing field for this Black and Latino community. The building, initiated as it was by the community itself, has become a rallying point for the future and a source of pride and hope.

Beehive of Activity - The grades 11-12 cohort commons collaboration space overlooking the general learning commons.

Fully Glazed Science Exploratories

The programmatic focus of the STEM educational program and the thematic center of the school's two public elevations.

SCOPE OF WORK & BUDGET

- **Project Context | Students:** Size of school district, college, or client organization (# of students): 600 students
- **Project Context | People:** # of people (excluding students): 91
- **Site Area:** Acres/hectares: 1.34 acres
- **Floor Area**: (GSF): 130,052
- **Number of stories:** 4
- **Building Area | TGA:** New: 128,000
- **Actual Costs | Site Development Costs:** $7,845,000
- **Actual Costs | Building Costs:** $52,431,000
- **Actual Costs | Furnishing Costs**: $799,500
- **Actual Costs | Technology Costs:** $820,500
- **Actual Costs | Total Project Costs:** $73,498,000

Ground floor school-wide program spaces such as those for Art, the Media Center and high powered computing are treated like storefronts, reaching out and displaying learning to the surrounding community.

The new school is divided into pavilions which relate to the scale of its residential context.

SCHOOL & COMMUNITY ENGAGEMENT

This project was initiated by its local Cape Verdean, Black, and Latino community and subjected to rigorous community, school district and governmental (local and state) collaborative input.

As a public school project, the Dearborn 6-12 STEM Academy underwent an intensive process of client input incorporating long-term vision, hopes, desires, educational programming, and facilities. During the co-creation of the design, literally hundreds of meetings were conducted, ranging from large public meetings to small focus groups.

There was participation in programming, community programming and the functional detail from a wide variety of constituencies, including:

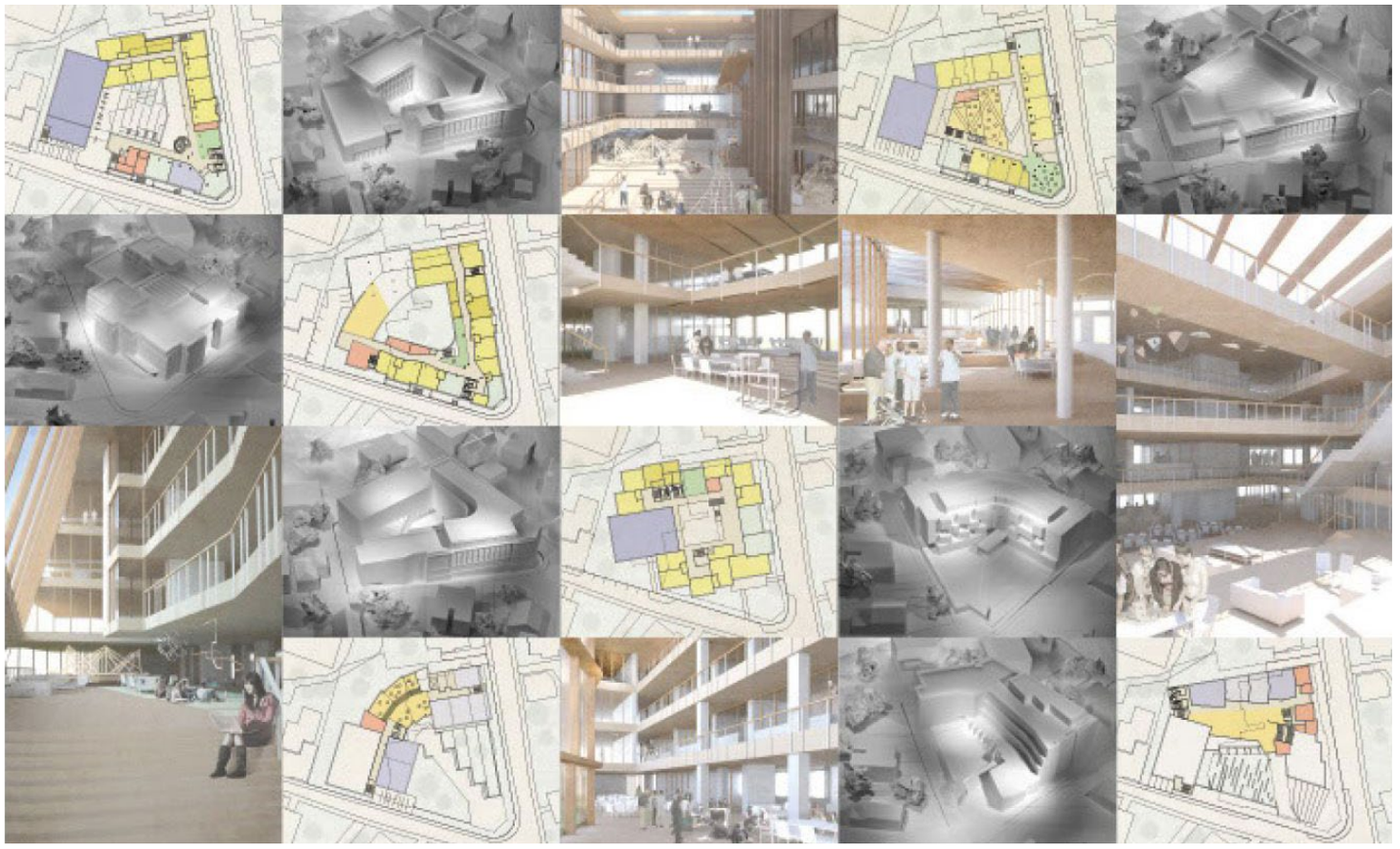
- Boston's Roxbury Neighborhood Community
- Parents
- Administration
- Faculty
- Staff
- City of Boston Departments
- Local and State Elected Officials
- State School Building Authority
- And last but not least - the Students themselves

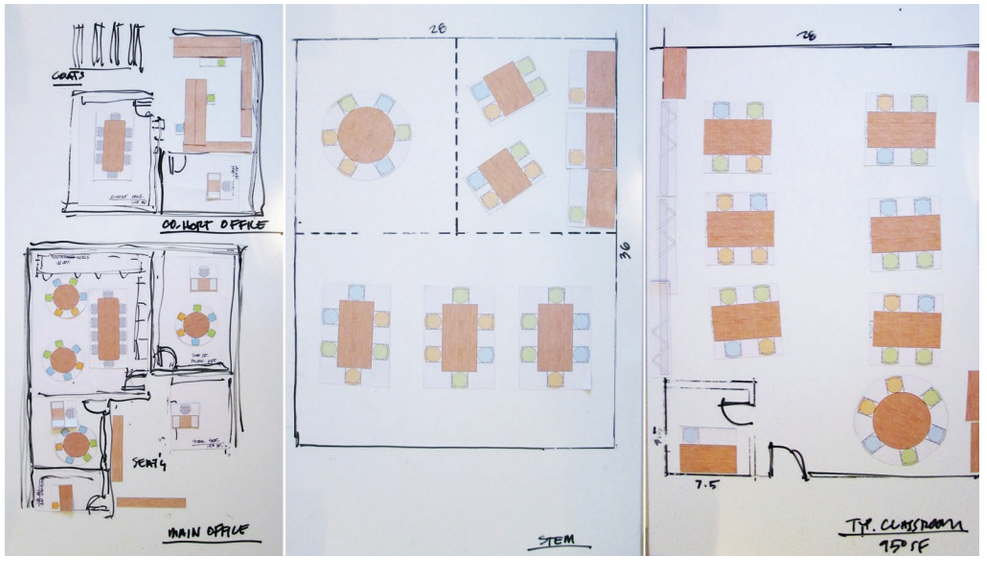
Workshop Collaboration

Since the inception of the project, working together with Boston's Public Facilities managers, the design and planning process drew heavily on input from the future building's direct users-the faculty and staff of the Dearborn 6-12 STEM/Early College Academy, Boston Public Schools central administration, students and community. Interactive, collaborative workshops were critical in providing the essential details of the unique and previously unimagined educational environments needed to implement new and innovative educational techniques. Separate focus sessions were convened to explore the typical classroom, science education 'exploratories' and special education spaces.

Student Engagement

Underlining the authenticity of community engagement, the process sought to draw out appropriate participation by the current middle school students themselves. Together with the school administration and faculty, the architect created two project-related 'design thinking' activities to help engender a sense of ownership in the future building and demonstrate the project-based technological education that will typify the educational future of the new school. Students researched and designed bicycle racks resulting in three innovative proposals considered for execution in the new building.





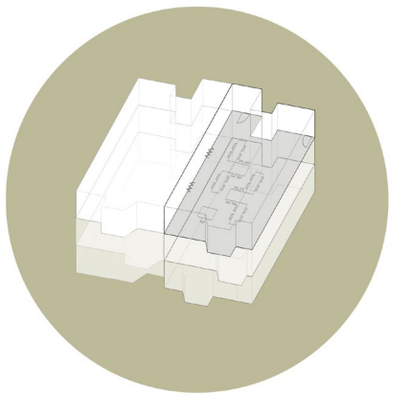
Above: Engaging true community and stakeholder co-creation through the iteration of exhaustive fully formed and visualized alternatives.

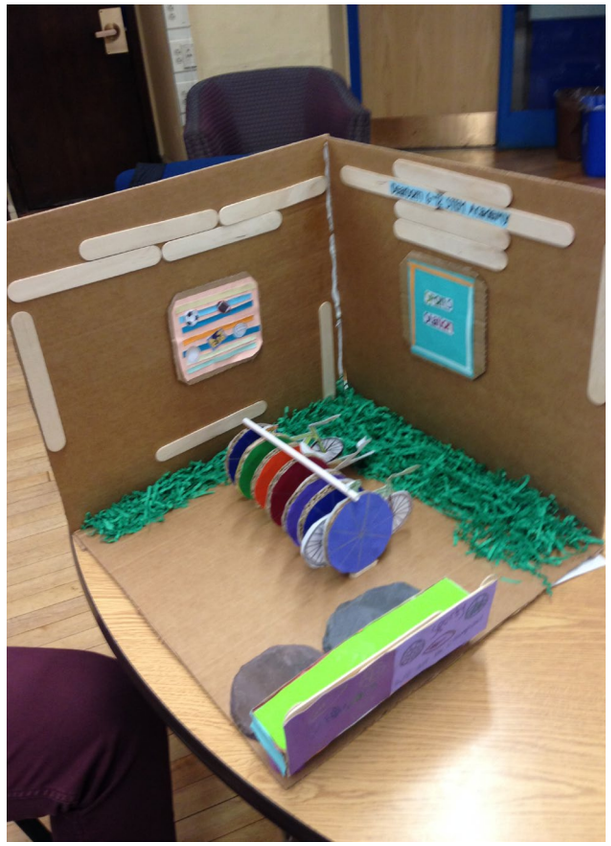
Left: Engaging the faculty in detailed classroom design through real time charrettes facilitated using easily modified graphics tools such as magnetic furniture pieces and dry ease plans.

As a school endeavoring to entice students into STEM career pathways, the building itself is offered as a teaching tool. The building's featured integral elements include the differentiated south and east/west sun control elements, exposed balcony suspension steel, illuminated HVAC ring duct above mesh ceilings, and color-coded glass-enclosed mechanical penthouse. These are all meant to excite technological curiosity further.

Clockwise from top right:

- Middle School student bike rack presentation.
- The student bike rack concept as executed, along with memorial plaque.
- Winning Bike Rack Project Concept Model – A bike rack with turning bicycle like wheels that adjust to the position of the bike lock.
- The 28' wide classroom massing reflecting the approx. 28' typical residential building width – used as the primary building block of the school and relating school to community context.
- Responding to community input, fragments from the prior Middle School building were incorporated into the learning commons outdoor classroom.





EDUCATIONAL ENVIRONMENT

Dearborn Vision

Through developing resourceful, resilient, academically and career-ready high school graduates, the Dearborn school community aspires to be a world-class educational institution that enables young people to succeed in college and STEM-related careers.

Clockwise from top left:

1st Floor plan

2nd Floor plan

3rd Floor plan

4th Floor plan

Dearborn Mission

To increase the number of high school graduates prepared to obtain a postsecondary degree and contribute to our community's economic growth and vitality through leadership and a strong STEM workforce.

ACADEMIC PROGRAM FEATURES

Learning Sub-Communities

Dearborn students are divided into three cohorts based on grade level, age, development, and typical transition years. Each Dearborn cohort may occupy a distinct realm or neighborhood within the building, with an emphasis on the creation of small, integrated, and personalized learning communities that promote ownership and accountability through the grouping of cohort students, teachers, and administrators.

Early College High School Component

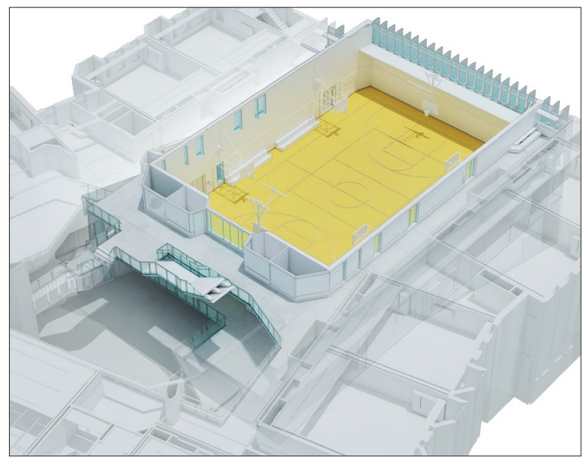
The Academy has an Early College component for 11th and 12th-grade students through a partnership with Northeastern University. Dearborn students can take college courses while simultaneously earning high school and college credits. This unique opportunity provides for a seamless transition from High School to college or the workforce.

Expanded Learning Time

(ELT) provides opportunities to take STEM-related electives. The Dearborn Academy has an expanded day with a potential 3 to 3.5 additional hours of Expanded Learning Time (ELT). - This time is used in various ways to enhance and expand the Dearborn students' learning experience.

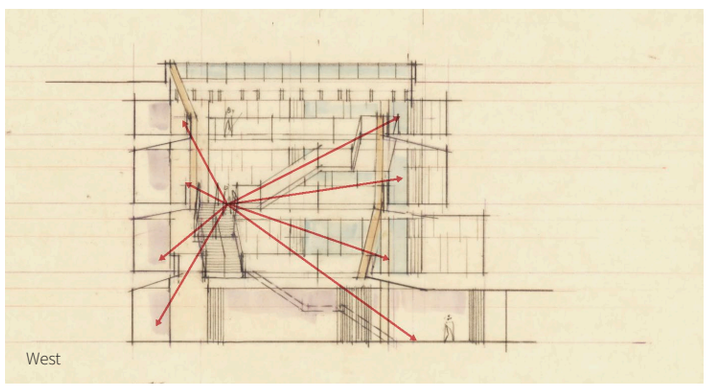
Cross-content teaching teams

Teachers are part of a collegial community of Dearborn educators who collaborate in common planning time and across subject areas at each grade, creating an integrated learning experience for students. Teachers participate in teaching teams delivering key lessons with a team approach and individually teaching classes.

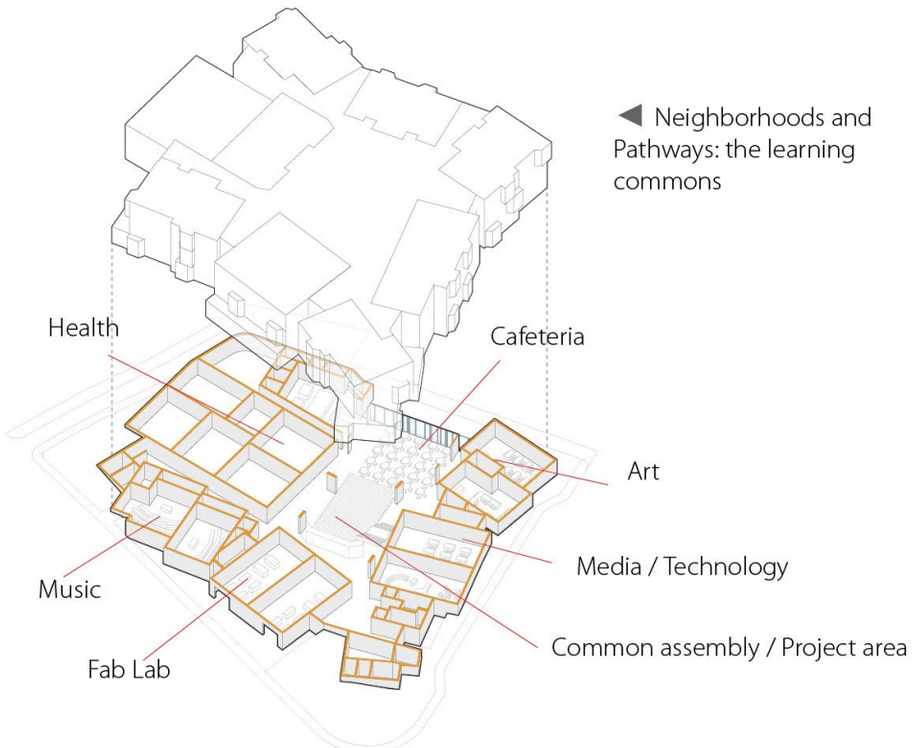


Above: The embedded gymnasium with acoustic enclosure and interior glazing – contributing the joy of movement to the excitement of school community.
Below: Section showing the connection of all spaces through the main learning commons atrium.

Left: A school where students shine their inspirational light on one another.
Below: Concept sketch indicating vertical connections in the atrium.

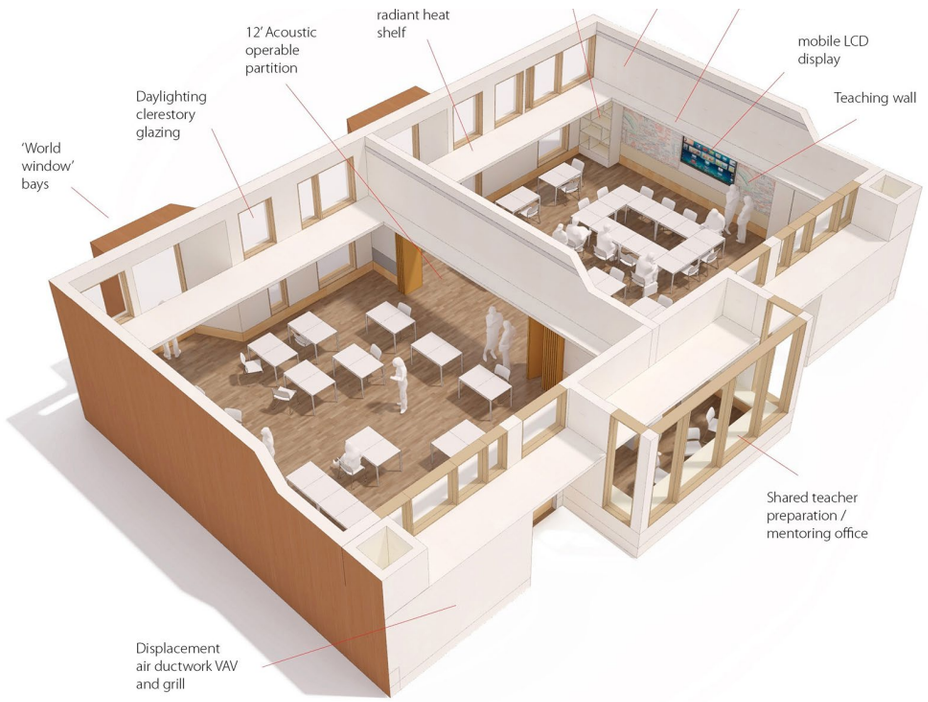


Grouping the community wide core elements around the Learning Commons/Cafeteria to create a concentrated activity 'mall'.

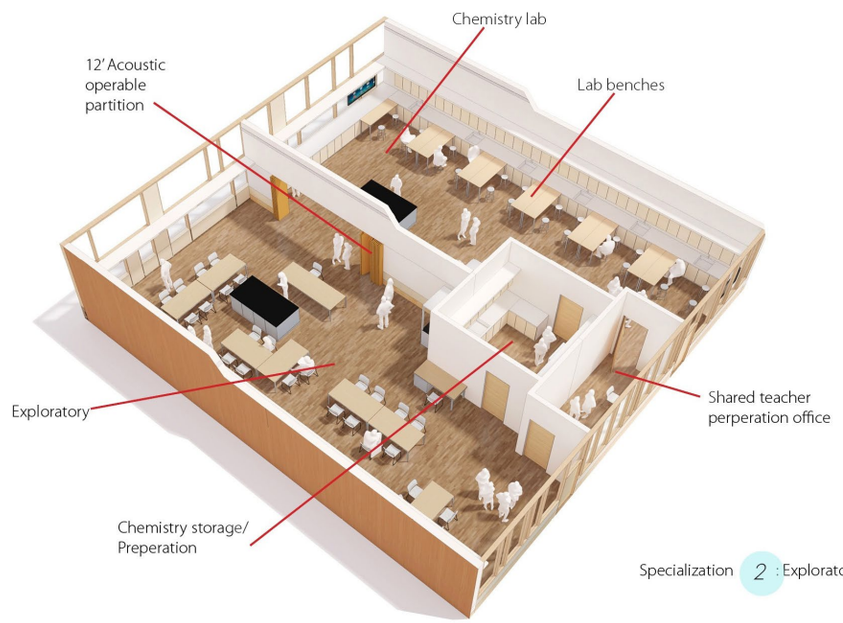


◀ Neighborhoods and Pathways: the learning commons

Typical Paired Classroom Suite joined by a flexible acoustic partition and shared teacher/mentoring office.

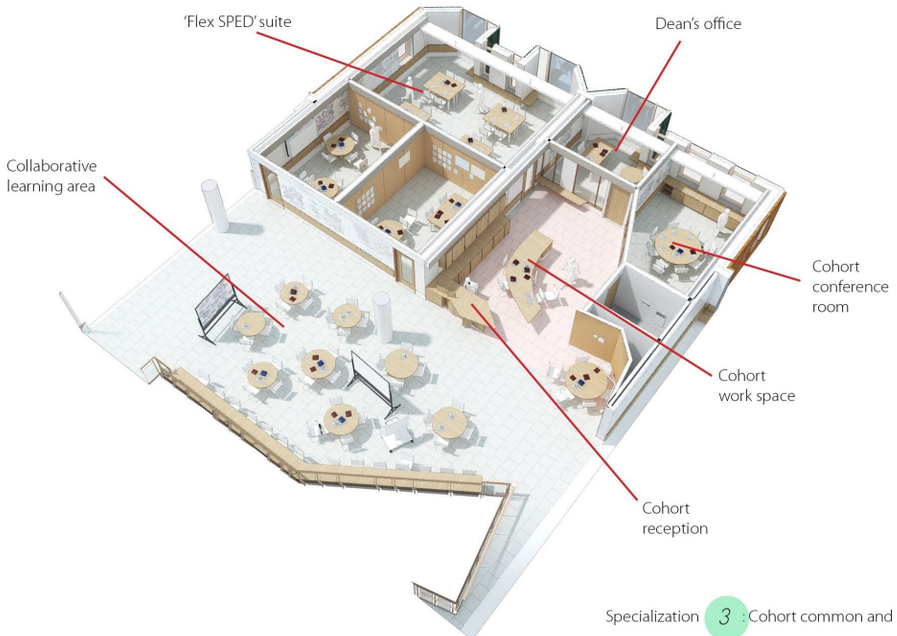


Paired Science Classrooms with abundant interior and exterior glazing.



Specialization 2 : Exploratories and Labs

The cohort suite: Cohort project-based collaboration zone grouped with the cohort administration suite. Using 3-way flexible partitions, the Special Education instruction areas are configurable into variety of size classrooms in order to accommodate changing needs, day to day and year to year.



Specialization 3 : Cohort common and Offices

Diagram of the
“visible technology”
air distribution

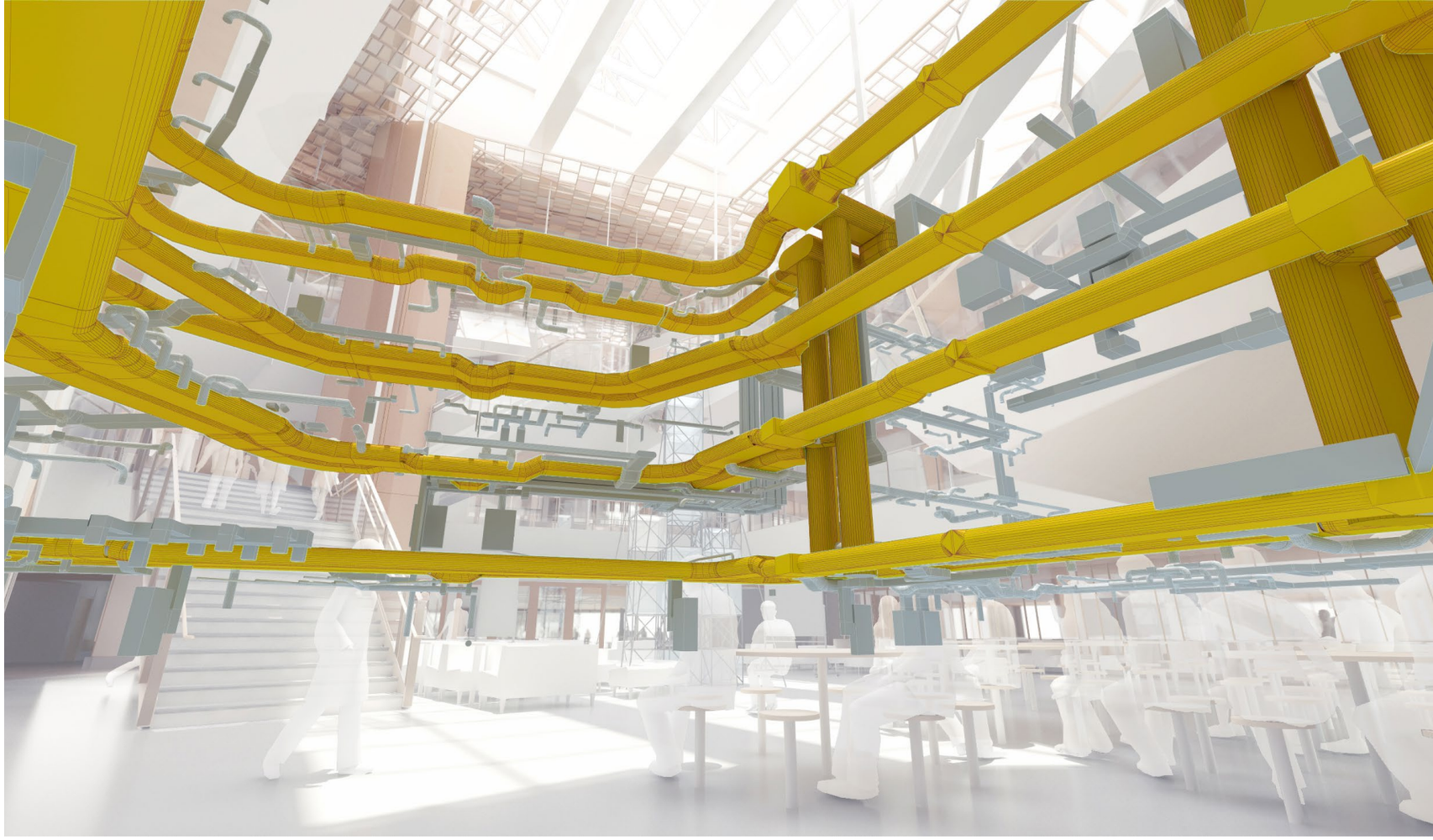
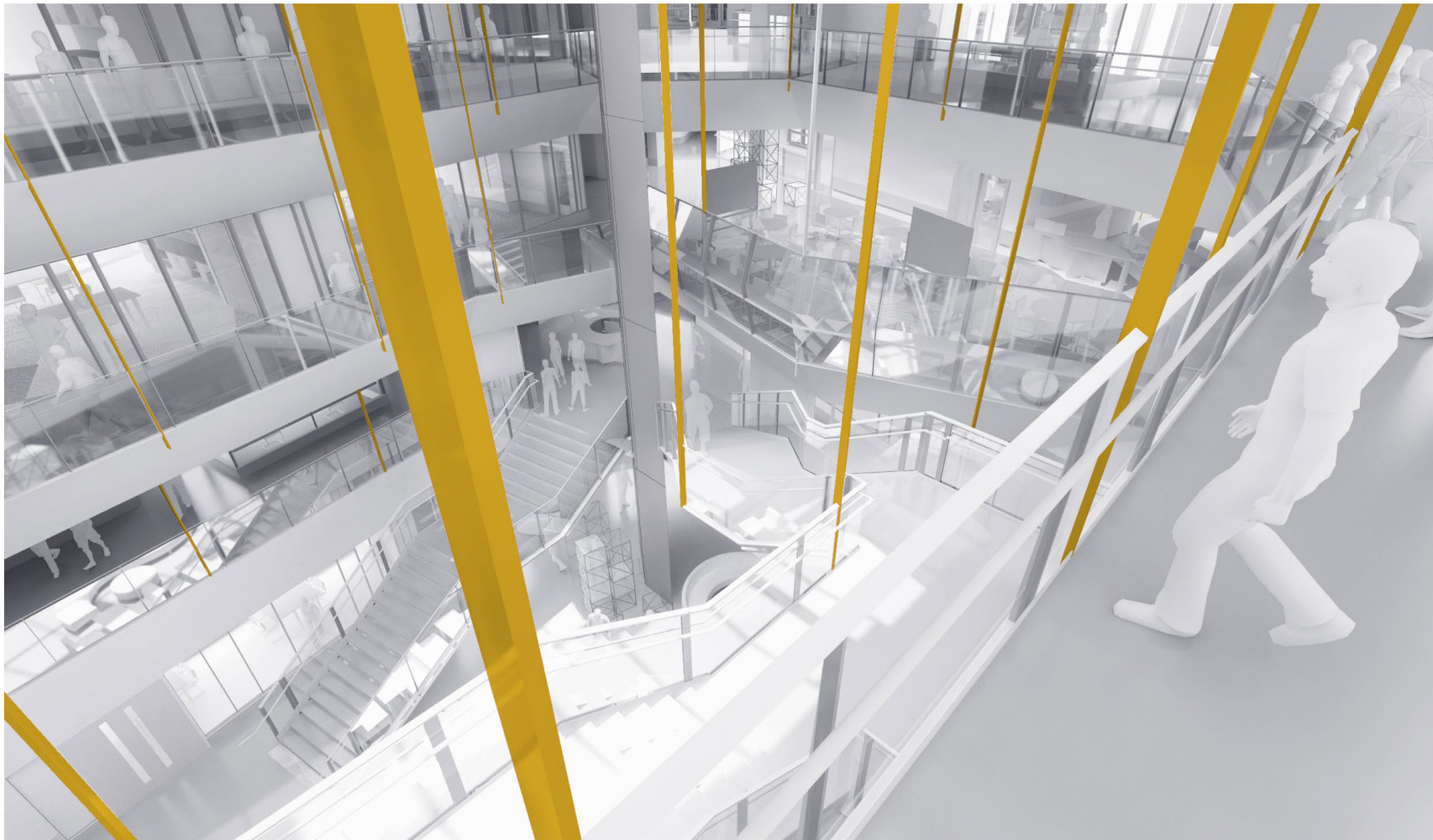


Diagram of the
“visible technology”
structural system



Vertical Collaboration
Teachers also collaborate “vertically” within subject areas to strengthen their core instruction. Students see the deep conceptual connections across disciplines.

While maintaining the importance of all core subjects, this planning ensures each student’s mastery and understanding of the interdependence of subjects and the progressive acquisition of the necessary skills and experience prepare them for a successful future.

DESIGN PRINCIPLE 1:
Operate on a “Mastery-Based” System
Students have equitable access to a robust support system and are provided adequate learning time necessary to meet expectations and STEM outcomes. Time is flexible, mastery is not.

DESIGN PRINCIPLE 2:
Focus on High-Quality Instruction and Standards-Based Trans-Disciplinary Curriculum
Design curriculum integrates academic disciplines in a purposeful manner when there are natural connections and appropriately merge content areas to deepen students’ understanding of content knowledge.

Trans-Disciplinary Design Features
- Moves beyond just “connecting “silos”
- Multiple teacher collaboration areas
- Access to technology for students and teachers
- Cohort neighborhood groupings that promote community
- Supports increasing levels of independence for students
- Flexibility of use
- Highly visible exhibit & project spaces
- Movement between distinct communities within the building
- Visual access throughout the building for informal supervision of students
- Varied spaces that include areas for collaboration as well as privacy
- Adult meeting spaces, including meeting spaces for parents

DESIGN PRINCIPLE 3:
Design-Focused Learning and Graduate Students with the Ability to Engineer Solutions to Real-World Problems
A technologically designed facility, equipped to be instructionally supportive and with flexible and adaptable space. Supporting students who apply their knowledge through in-depth science exploration, utilize design elements and aspects, and engage in innovative thinking and problem-solving.

Seeing and Being Seen
Shared teacher planning office with adjacent enlarged corridor break out space.

Design-Focused Design Features

- Flexible classrooms (movable walls where appropriate)
- Collaboration areas
- Fabrication (FAB Lab) type spaces
- Common (gathering) spaces for students and teachers
- Extended learning beyond spaces within the school and out into the community
- “Professional workspaces” within the school
- Varied and ubiquitous technology interfaces
- Walls fully utilized for display of student work or views into classrooms

DESIGN PRINCIPLE 4:

Empowering and Supporting Students Through Personalized Learning

Encouraging STEM education where learning experiences occur in and out of the school building and students experience seamless transitions between the institute of higher education, business partners, and other learning providers.

DESIGN PRINCIPLE 5:

An “Intimate” School with a Large Footprint

A focused, coherent school environment where all teachers and support staff embrace STEM and hold each other mutually accountable for student success in STEM. Provide an adult learning environment that supports highly effective teams.

Personalized School Design Features

- Welcoming “gateway” spaces with a clear greeting station and adult presence at entry
- Provide Clear neighborhood zones with distinct identities
- Students are well known, and their learning experience personalized
- Community partners have a strong physical presence
- Transparent and accessible, seeing and being seen, no blind corners.
- Public zones that move toward more private zones
- Intimate spaces
- Large flex spaces to accommodate visitors and gatherings
- Closed-door spaces for “politics” and more private conversations
- Safety zones that offer opportunities for decompression
- Opportunities to socialize in supervised, age-appropriate, and inviting ways

Grades 8-10 Cohort Commons overlooking the general commons atrium.

The Cohort administrative suite welcome desk and team teaching conference table co-located with the cohort commons.

“Just as the building helps the students to inspire one another, it must also act as a beacon to demonstrate the excellence and achievements of its students and programs to the surrounding community”

LEARNING SPACE PRINCIPLES

The STEM vision is broken down further into a series of more specific ‘Learning Space Principles’ meant to be expressed in specific spatial or configurational terms by design qualities.

Small Scale Learning - Given that much of the content of the educational programs are delivered over the web, situations are provided where non-targeted broad-audience information is tailored or mentored to the needs of an individual student. This requires spaces that are not just adapted from traditional classroom areas, but which are predisposed to being broken off and framing small groups of students with students or students with teachers. This is achieved through supervised alcoves and eddies off of public circulation or through the proper sizing of classrooms, allowing simultaneous independent use by separate groups in separate corners.

Collaborative Learning - Similarly, in response to the web and contemporary modes of thought that emphasize the critical incremental contributions by individuals to collaborative group projects, places specifically designed for collaboration are provided. These are the kinds of spaces that engender eye contact, provide the comfort required for collaborative trust, and allow for spontaneous voluntary engagement.

Collaborative Teaching - Any building that is prudently planned for the future of education must provide incubators for the shared pedagogic thought necessary to improve its curriculum and adapt to its students’ unique needs and the needs of an evolving world. Dedicated spaces for teacher interchange were therefore carefully considered both at the large group scale and the scale of dialogue between pairs of teachers. Collaborative teaching opportunities were also considered in the combinability of classrooms which allows for the advantages of team teaching to larger groups of students and the sharing of a larger range of topics.

Visible Learning - Students learn best from one another and are most effectively propelled towards excellence by one another’s example. This occurs in two ways in the school environment. In the first, students witness peer activity of committed collaboration and learning. This is similar to the study libraries so popular at places of higher education, where students enjoy the spectacle of watching and being watched while they pursue their studies. Secondly, students are mutually inspired by seeing the evidence of completed exemplary projects visible throughout the shared environment. This is similar to the use of tack surfaces and display cases in traditional schools, but to a far greater extent in the STEM school environment, where public spaces are densely populated not only by completed work but also by

Typical Classroom ‘World Window’ small group teaching alcove – pushing out to engage the world to come.

work in progress – demonstrating excellence not only in the result but in the process as well.

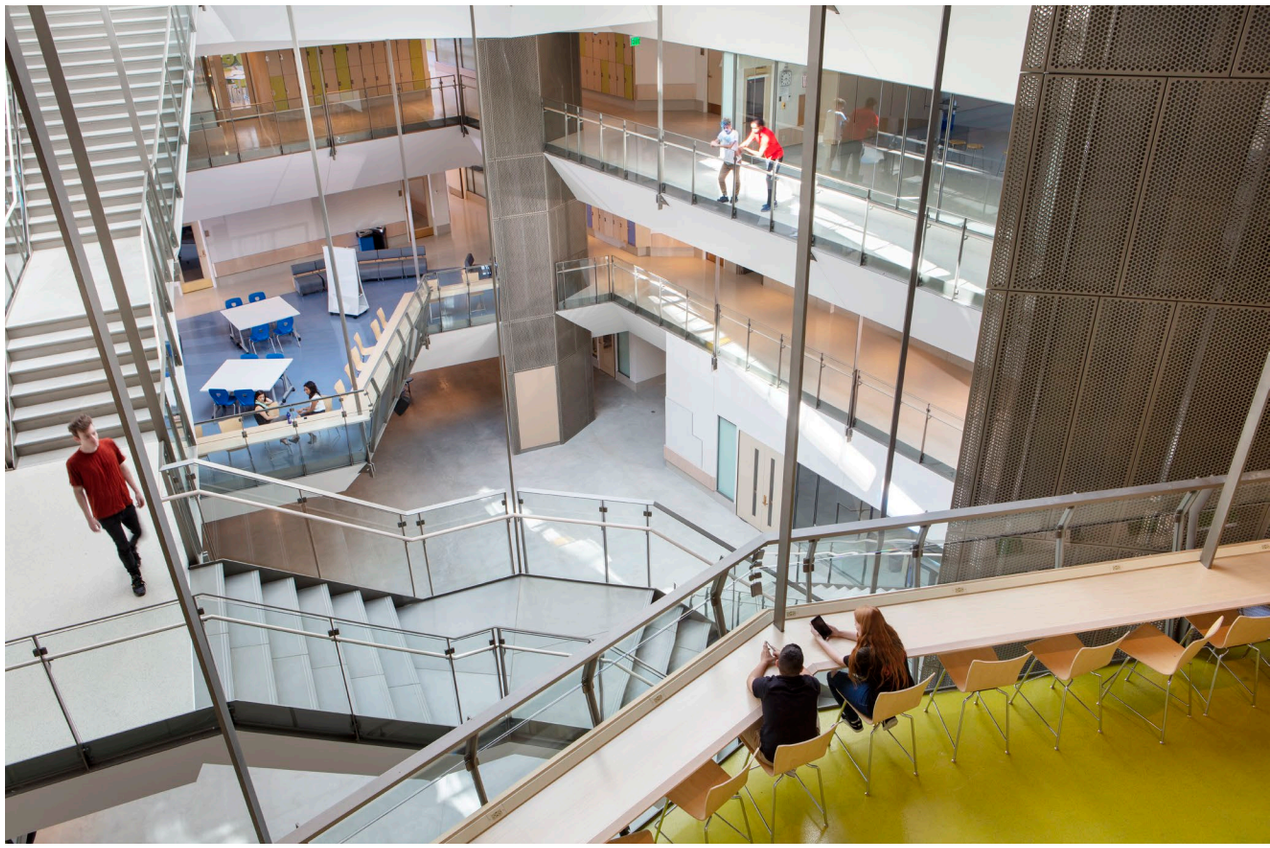
Flexible Learning - Given the fluidity and the spontaneity of collaborative and project-based learning experiences in the stem curriculum, spatial configurations must be fluid and spontaneously configurable. This feature needs to occur not only in the movements of furniture and the open space which allows it but also in the rearrange-ability of room adjacencies and in the expansion and contraction of floor areas and their limits of separation.

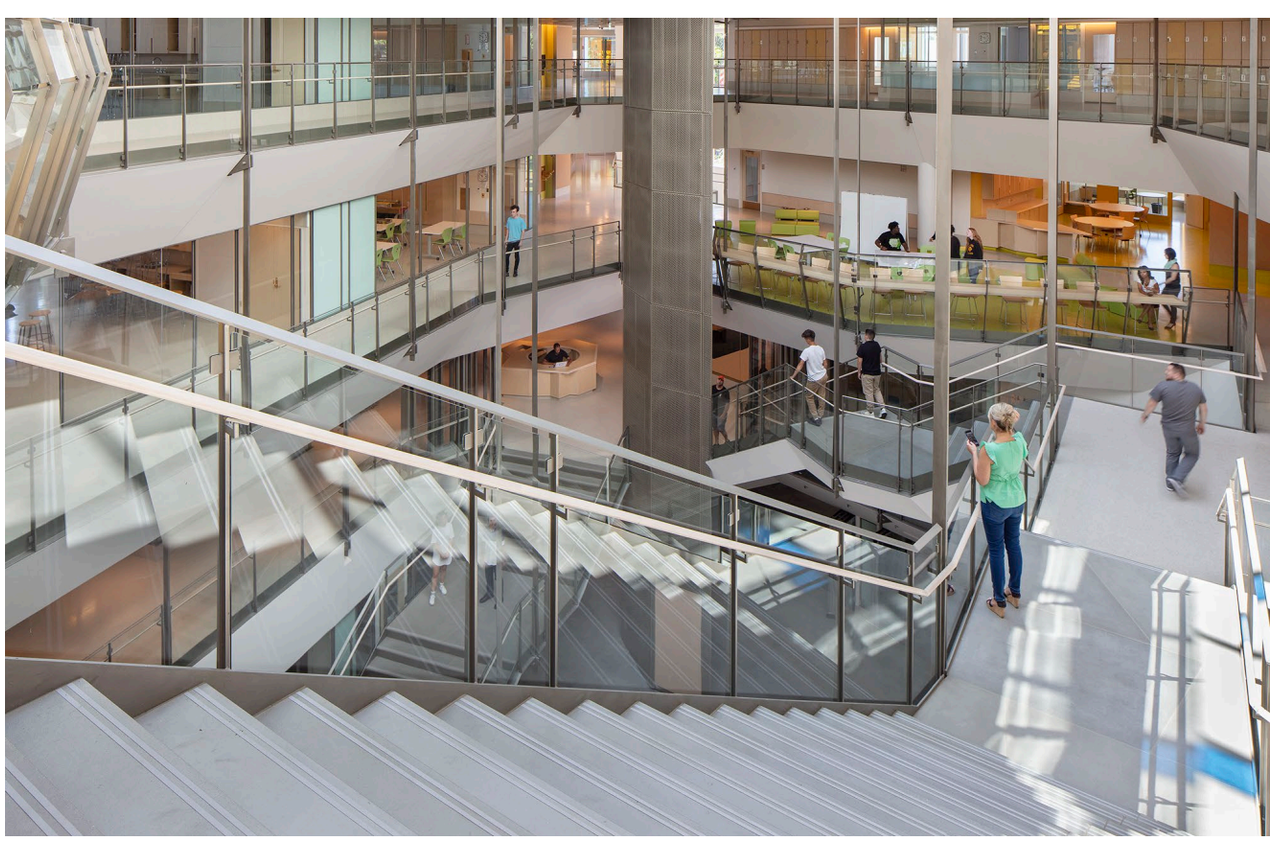
Community Engagement - STEM, as a curriculum-based in awareness of real world problems and which is often effected through project-based learning, relies on a certain exchange of people and ideas with the outside world. Therefore, this new kind of school needs to innovate in creating a tangible openness and porosity to the outside community while at the same time preserving the safety and security of the students. This porosity needs to serve the traditional community uses of public school buildings and provide places for collaboration with outside partners and resources for joint projects. Finally, just as the building helps the students to inspire one another, it must also act as a beacon to demonstrate the excellence and achievements of its students and programs to the surrounding community.

Outdoor Learning - The advantage and disadvantage of classroom-based teaching are that it creates an insular world where students are introduced to filtered knowledge in a contained environment. In moving beyond the classroom-based model, the stem curriculum seeks to break down the boundaries between the simulated world of the school and the real world. Therefore, both symbolically and in practice, the outdoor classroom is a key element of the proposed pedagogy - with students relating directly to nature and to the adjoining city with outdoor-based science activities in fields such as earth sciences, ecology, and biology. The outdoor classroom also allows for large-scale fabrication projects of the type that will be ongoing in the fabrication labs and exploratories and which need to push out to the terrace spaces of the site.

Visible Technology - It is said that “to marvel is the beginning of all knowledge.” A building for STEM education needs to participate actively in stimulating its occupants to ask questions about the physical world and to be posed with intellectual challenges. The fabric of the new Dearborn itself will seek to demonstrate the properties of innovation and inquiry, which are the mission of its community. Given the relationship between building science and the constituent STEM disciplines of science, technology, engineering and mathematics, portions of the building are dedicated to demonstrating the fascinating and complex sciences and technologies in the building fabric. These might include the physics of statics in the expression of structure, thermodynamics in the exposed configuration of mechanical systems, light phenomena in the didactic control of daylighting, ecology in the arrangement of landscaping and water management, the myriad physical properties of different building materials and sustainability in the monitoring and display of energy performance.

Commons’ overviews - A web of connectivity.





PHYSICAL ENVIRONMENT

The plan diagram is the product of both inward and outward forces. The site, located at an intersection between three competing city grids, is highly impacted by the surrounding urban fabric. The building responds with a perimeter of classroom sub-buildings each with a scale and orientation relating to its surroundings. Fully glazed science ‘exploratory’ classrooms command the center of each street elevation. At the voided core is the central educational space – the Learning Commons - with its attendant food service and ring of ground floor shared core destinations: art, music, maker, high powered computing laboratory, digital fabrication, media center, dance, and physical training. Also adjoining the Learning Commons is the gymnasium, visible through the acoustic glass to every corner of the school.

Rising from the Learning Commons, the active monumental stair spirals up past the second-floor entry and main administration level to the classroom floors, each with its age cohort (11-12, 8-10, 6-7) and nucleus of satellite collaboration balconies and related cohort administration/reception suites. Team teaching-oriented paired classrooms are connected by high acoustic performance operable partitions and a shared teacher office, which allows for the removal of the fixed teacher’s desk from the classroom for greater flexibility. The teacher’s offices are entirely enclosed in glass and projected into the public space of the building - promoting the visibility of teacher activities and allowing for optimal supervision, both horizontally and vertically, of the adjoining atrium.

Though the structure is highly adapted to its impacted urban site, it comprises standardized building blocks of paired classrooms, each 28’x32’. The paired classrooms are fully openable to each other, making a flexible variety of sizes of activities possible. The innovative adjacent shared teacher offices remove the teacher from ‘ownership’ of the classroom, therefore flexibly freeing up educational space for independent programming and allowing teachers space to do preparatory work without privately occupying large floor areas. As each space is fully daylit, with individual environmental controls, the building places few limitations on adaptation to future uses, especially housing.

Clockwise from top:

- A composition of bay windows reflecting the local residential vernacular.
- The main entry – opening outward to embrace the students and community.
- Grades 8-10 and 11-12 science exploratories – expressing the high technology aspirations of the school.

Clockwise from top:

• Brilliant daylighting illuminates the open, 'living' technology of the building with its tensile structure and ring duct HVAC distribution visible about transparent ceilings.

• Science Exploratory with overhead flexible infrastructure grid.

• STEM teaching on display in one of the fully glazed Science Exploratories

As a school endeavoring to entice students into STEM career pathways, the building itself is offered as a teaching tool. Featured integral elements of the building, such as the differentiated south and east/west sun control elements, exposed balcony suspension steel, illuminated HVAC ring duct above mesh ceilings and color-coded glass-enclosed mechanical penthouse, are meant to excite technological curiosity.

SPECIFIC SPATIAL ATTRIBUTES

Natural and Artificial Lighting:
A large part of the project's effort was expended on the accurate fulfillment of 100% daylighting for all primary classroom spaces. See project description for details.

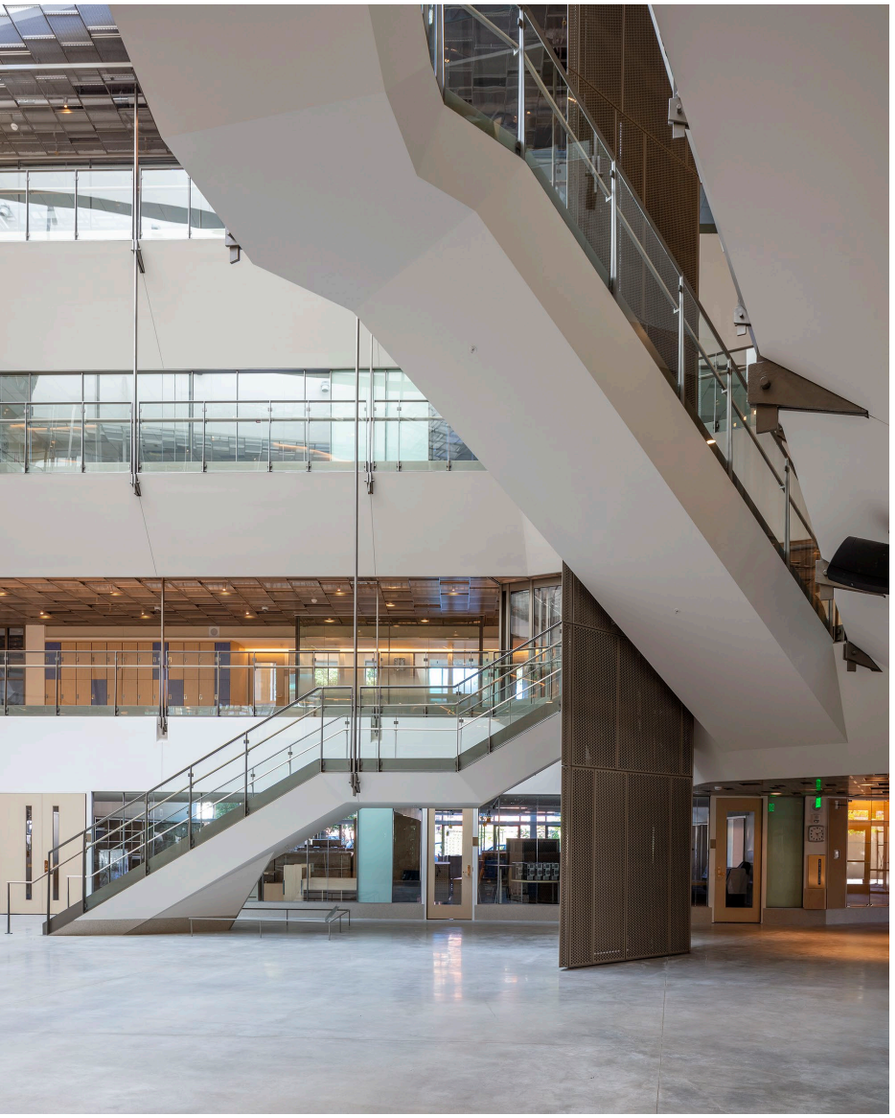
Thermal Comfort/Indoor Air Quality:
Environmental control is accomplished using an advanced 'Displacement Air' distribution system, assuring individual room controlled uniform occupant comfort with minimal air movement or noise, maximized air changes, increased student alertness and decreased absenteeism.

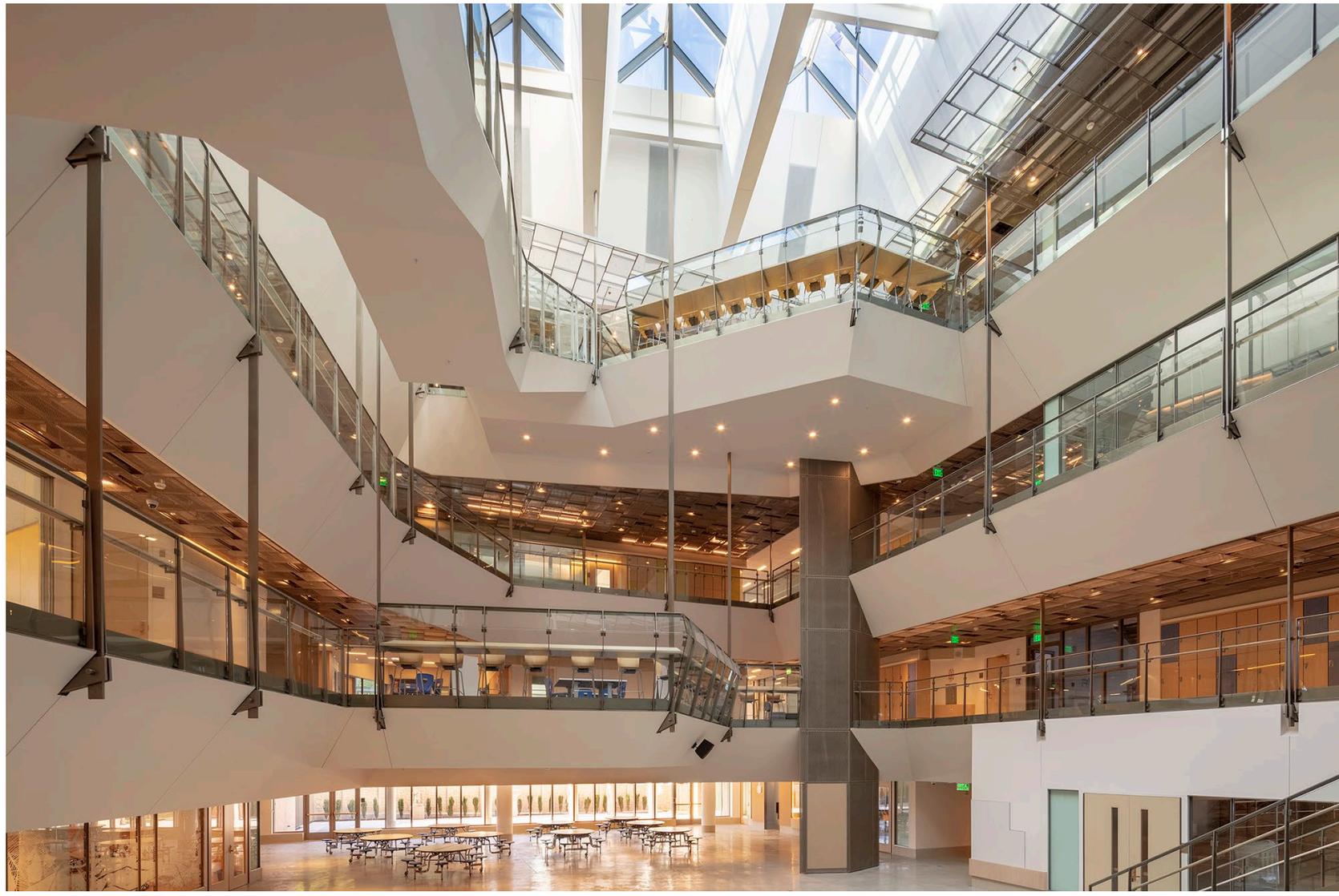
Happiness:
The visibility of the entire community to itself has contributed to a tangible buzz of well-being. Teachers in their glass-enclosed offices are visibly and socially accessible to students, and students' ownership of shared collaboration spaces contributes to an upbeat sense of community.

Biophilia/Connection to Nature:
All occupied spaces have views of the surrounding verdant residential neighborhood.

Acoustics:
With displacement air distribution, academic spaces are genuinely silent, supporting communication. All spaces are tested to meet or exceed 'LEED for Schools' separation and room acoustics standards.

Food/Movement/Exercise:
Instead of sequestration at the perimeter, as in most schools, the Dearborn's exercise and food service areas are at its core. Large expanses of glass at the gym, and Learning Commons dance and exercise studios, promote awareness of health.





PHYSICAL ENVIRONMENT FEATURES

Communication of a high level of trust and respect for the work of teachers and students do by creating learning environments that have the look and feel of a “high-performance” workplace with beautiful textures and colors, lofty ceilings, and lots of exterior windows.

Clearly delineated “clusters of learning” that allow smaller groups of students and teachers (cohorts) to know each other well while also fostering a sense of ownership and accountability within cohort groups.

Varied spaces that flexibly support key program elements such as team teaching, integrated curriculum development and delivery, project-based and active learning, community-based connections, student internships, and frequent student presentations and exhibitions of their work.

Dedicated Teaching Planning and Individual Mentoring Offices: A challenge was to remove the teacher’s fixed desk yet design a way for the teacher to stay engaged with the classroom and the school.

Team teaching oriented paired classrooms are connected by high acoustic performance operable partitions and a shared teacher office, which allows for the removal of the fixed teacher’s desk from the classroom for greater flexibility. The teacher’s offices are entirely enclosed in glass and projected into the public space of the building - promoting the visibility of teacher activities and allowing for optimal supervision, both horizontally and vertically, of the adjoining atrium.

Professional and collaborative environments that adapt to the individual, small- and large-group work are available for the students as well as teachers.

Right: General Learning Commons Cafeteria with projecting grade 6/7 cohort commons above.

Left: The main stair, a thoroughfare of engagement and connection.

Flexible classrooms, labs, and other learning environments, some of which may have movable walls, and all of which have easily reconfigurable furniture to adapt to a wide variety of activities.

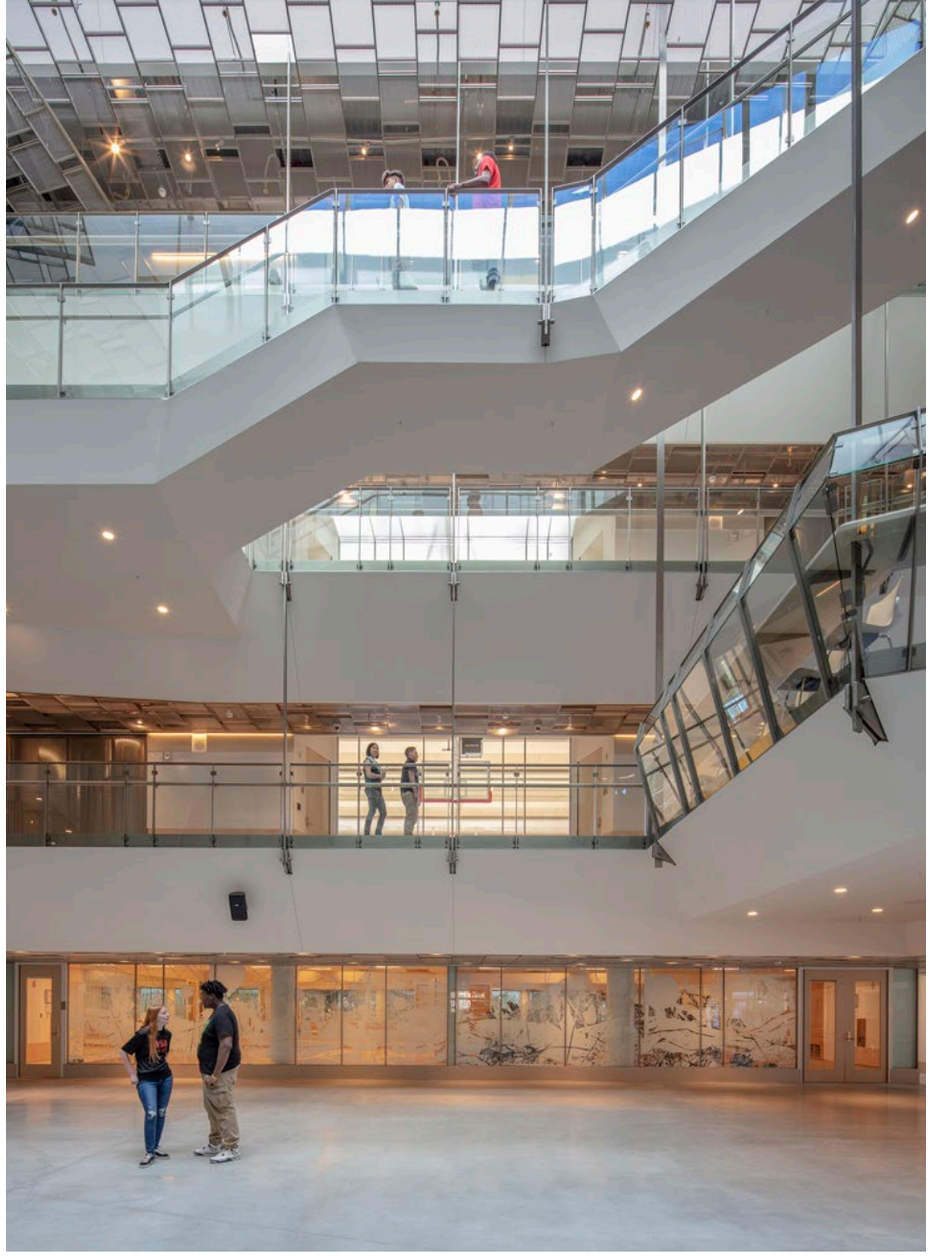
A high level of interior “transparency” makes the teaching and learning going on in the school readily visible to all its inhabitants.

Abundant wall surfaces in the school’s public and circulation spaces offer opportunities for the ongoing collaboration, display and exhibition of student work.

Lofty and “exposed” ceilings.

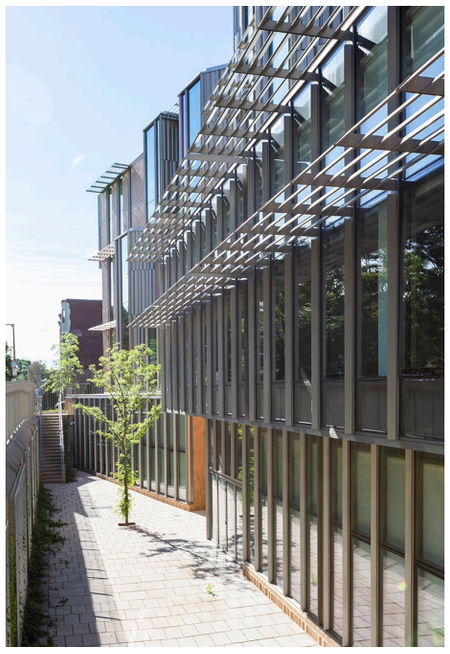
The project features durable finishes and materials that promote long-term use and ease of maintenance. On the interior, the lower walls are designed to meet Boston Public Schools’ strict criteria for durability. From the 30-inch beltline down, they are typically built of bamboo plywood bumper rails projected to form a marker tray. Below that is a 12-inch course of VCT flooring applied to the wall as a base. From the beltline up to the 7’2” data datum, walls are covered in writable magnetic sheet surfacing to allow for spontaneous presentations and displays while providing a dent-resistant maintenance-free surface. Painted surfaces within arm’s reach have been reduced to a minimum. By exposing the steel structural steel deck as a finished ceiling, the project eliminates the need for several thousand SF of hung acoustic tile ceiling, thus eliminating those material, transportation and waste costs.

Professional development is available for teachers in the flexible use of technology, furniture, and space to successfully realize the Dearborn vision and deliver its innovative educational program. This is especially visible through the dedicated STEM training suite.



Clockwise from top:

- Dance Studio and Exercise Room Grouped with other Core STEM spaces around the Central Learning Commons.
- Transparent Shared Teaching Office with Classroom Suite beyond.
- Fabrication Lab and Maker Space Outdoor Terrace as viewed from the school’s main entry.



RESULTS OF THE PROCESS & PROJECT

District and City -wide Impact:
Now engaged in a 10-year program to rebuild its 49,000 student, 123 site school infrastructure, the Dearborn has become a model for Boston Public School's vision of education for the future, not only for its students but for the City as a whole. At the invitation of the Mayor's office, the school building was honored to be set forth as an example and host Amazon's executive headquarters' search committee as among the City's finest examples of its vision for the future. It has been featured by the Harvard Graduate School of Education's "Learning Environments for the Future" Institute and received a rare Honor Award for Design Excellence from the Boston Chapter of the AIA. It was accorded the City's and Boston AIA's highest design honor as metropolitan Boston's most beautiful building of any type built in the last ten years through its receipt of the 2018 Harleston-Parker Medal.

Neighborhood Impact:
The new school has become a rallying point for its aspiring community in the three years since its completion, symbolizing pride and progress. As evidence of this pride, the building is free of vandalism or graffiti both inside and outside. The surrounding neighborhood has been uplifted with new development and reinvestment on every block and street corner.

Student Impact:
As a final commentary on the connection between the project's central concept goal to excite and empower the Black and Latino student population's commitment to new pathways for success:

In its first year of operation alone, the attendance rate for the Dearborn STEM Middle/High School rose to 93.6%, exceeding that of all other schools in the district save the City's two entrance exam high schools. In addition, the average number of student absences dropped by 3.4 days.

In terms of student performance, the number of 6th through 8th grade students meeting grade level math and English requirements has doubled. 5-year graduation rates have improved from 82.4% prior to move in to a current 96.7%. 65.5% of Dearborn graduates are attending college, as opposed to 61.4% district wide.

Clockwise from top:

- Beehive of Activity - The grades 11-12 cohort commons collaboration space overlooking the general learning commons.
- 'Fashion Week' Runway performance - engaging parents and community.
- School-wide and community gathering in the Central Learning Commons

EDUCATIONAL SPECIFICATIONS

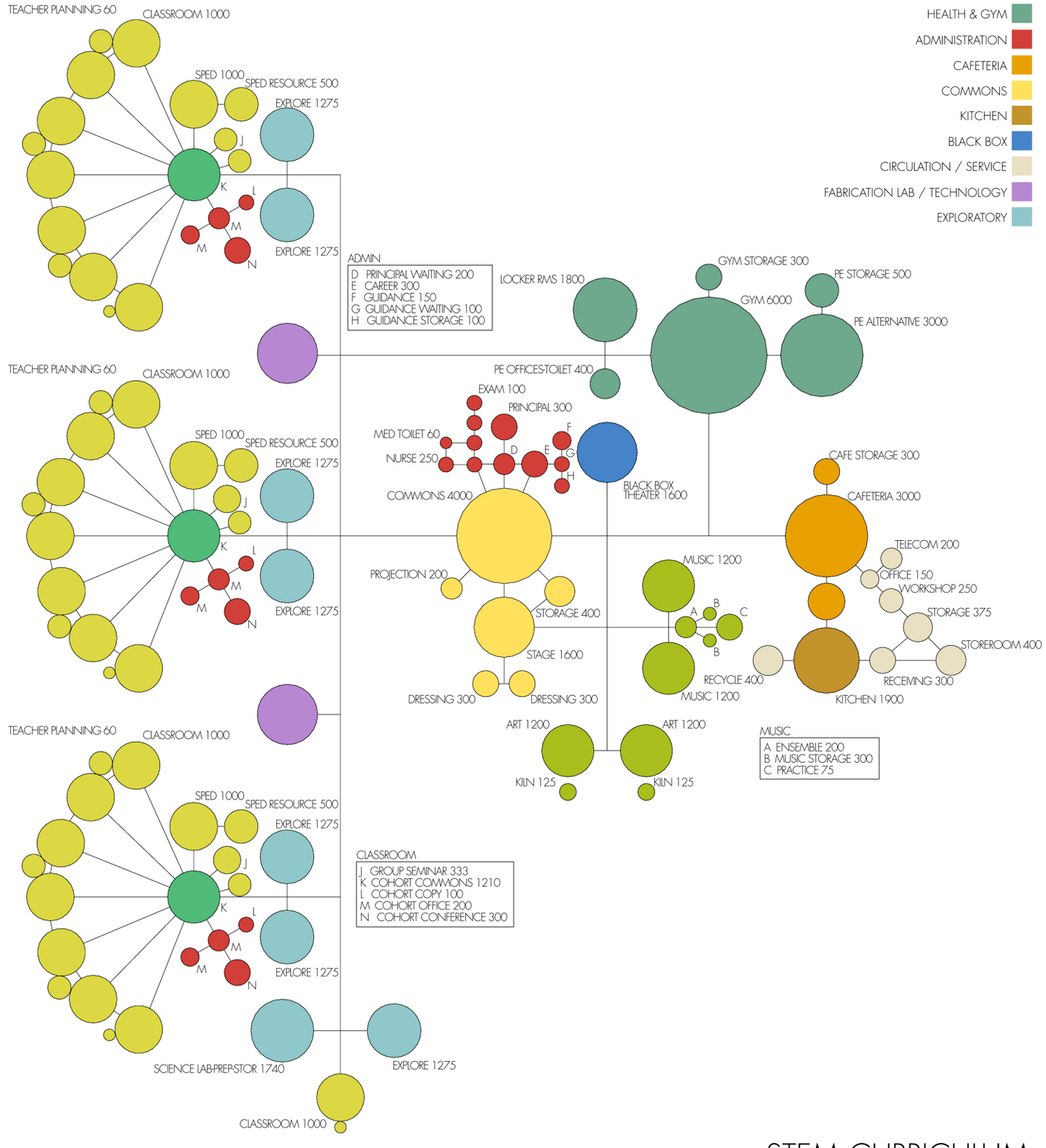
Building on the initial visioning document attached below, and developed in concert with Boston Public Schools aspirations for creating a model “STEM Academy”, the prescribed state educational program, or educational specification, guidelines were modified. Net floor area was shifted from more traditional room designations to create project-based, inter-disciplinary learning cohort and general commons’.

In some locations this reallocation of space was straightforward, as in the removal of locker rooms which are no longer supported by Boston Public Schools. Another case is the dispersal of a portion of guideline media center floor area from the centralized location on the ground floor to enlarged circulation spaces on the upper floors. In this way space was carved out for the collaboration commons which is the educational heart of each grade cohort.

ROOM TYPE	ROOM NFA[1]	# OF RMS	AREA TOTALS
CORE ACADEMIC SPACES			**35,631**
Classroom - General	948	24	22,752
Teacher Planning	47	28	1,316
Small Group Seminar (20-30 seats)		0	0
Science Classroom / Lab (Chemistry)	1,418	1	1,418
Prep Room	236	1	236
Central Chemical Storage Rm	124	1	124
Applied Physics Exploratory (Exploratory)	1,407	1	1,407
Environmental Sciences Exploratory (Exploratory)	1,407	1	1,407
Digital-Media Exploratory (Exploratory)	1,407	1	1,407
Earth and Space Exploratory (Exploratory)	1,407	1	1,407
Biotechnology Exploratory (Exploratory)	1,415	1	1,415
Break Out Areas	193	12	2,316
Storage	72	2	144
Storage	123	2	246
Closet	18	2	36
SPECIAL EDUCATION			**6,442**
Self-Contained SPED	958	3	2,874
Self-Contained SPED Toilet	0	0	0
Resource Room (Part of Flex/SPED)	529	4	2,116
Small Group Room (Part of Flex/SPED)	242	3	726
Support Center (Part of Flex/SPED)	242	3	726
ART & MUSIC			**5,336**
Art Classroom - 25 seats	1,155	2	2,310
Art Workroom w/ Storage & kiln	183	1	183
Band - 50 - 100 seats [48 Seats]	920	1	920
Chorus - 50 - 100 seats [48 Seats]	915	1	915
Ensemble	220	1	220
Music Practice	84	2	168
Music Storage	620	1	620
VOCATIONS & TECHNOLOGY			**4,571**
Tech Clrm. - (E.G. Drafting, Business)	1,433	1	1,433
Tech Shop - (E.G. Consumer, Wood) (Fabrication Lab)	1,553	2	3,106
Service	32	1	32
HEALTH & PHYSICAL EDUCATION			**10,526**
Gymnasium	5,998	1	5,998
PE Alternatives (weight & Dance)	2,316	1	2,316
Gym Storeroom	310	1	310
Locker Rooms - Boys / Girls w/ Toilets	1,000	1	1,000
Phys. Ed. Storage	461	1	461
Athletic Director's Office	124	1	124
Health Instructor's Office w/ Shower & Toilet	233	1	233
Unisex Toilet/Shower	84	1	84
MEDIA CENTER			**4,937**
Media Center / Reading Room	1,442	1	1,442
Computer Lab			0
Cohort Commons	1,165	3	3,495
			4,329
Auditorium (Part of General Commons)	3,068	1	3,068
Stage (Part of General Commons)	848	1	848
Auditorium Storage (Combined w/ Chair/Table Storage)	413	1	413
Make-up / Dressing Rooms		0	0
Controls / Lighting / Projection		0	0
DINING & FOOD SERVICE			**5,080**
Cafeteria/Student Lounge/Break-out (Part of General Commons)	2,149	1	2,149
Chair / Table Storage (Combined w/ Auditorium Storage)	284	1	284
Scramble Serving Area	600	1	600
Kitchen	2,047	1	2,047
Staff Lunch Room		0	0
MEDICAL			**857**
Medical Suite Toilet	72	1	72
Nurses' Office / Waiting Room	216	1	216
Interview Room (combined with Nurse's Office)	97	1	97
Examination Room / Resting	472	1	472
ADMINISTRATION & GUIDANCE			**4,449**
General Office / Waiting Room / Toilet (Toilet adjacent M/W)	207	3	621
Teachers' Mail and Time Room		0	0
Duplicating Room	100	3	300
Records Room		0	0
Principal's Office w/ Conference Area	246	1	246
Principal's Secretary / Waiting	686	1	686
Assistant Principal's Office - AP1		0	0
Assistant Principal's Office - AP2		0	0
Supervisory / Spare Office (Dean's Office)	166	3	498
Conference Room (COHORT Conference)	263	3	789
Guidance Office	147	1	147
Guidance Waiting Room	100	1	100
Guidance Storeroom	100	1	100
Career Center	280	1	280
Records Room		0	0
Teachers' Work Room		0	0
STEM Training Room	576	1	576
Admin Toilet	48	1	48
Storage	40	1	40
Closet	18	1	18
CUSTODIAL & MAINTENANCE			**2,721**
Custodian's Office	152	1	152
Custodian's Workshop	270	1	270
Custodian's Storage	461	1	461
Recycling Room / Trash	336	1	336
Receiving and General Supply	343	1	343
Storeroom	227	1	227
Network / Telecom Room	392	1	392
Custodian Closet	180	3	540
Custodian Toilet		0	0
Custodian Storage	311	1	311
OTHER			**103**
School Resource Officer Office (Security Office)	103	1	103
TOTAL BUILDING NET FLOOR AREA (NFA)			**84,982**
Proposed Student Capacity / Enrollment			600
TOTAL BUILDING GROSS FLOOR AREA (GFA)[2]			**130,052**

DEARBORN SCHOOL
PROGRAM DISTRIBUTION

CORE ACADEMIC SPACES
ARTS & MUSIC
COHORT COMMONS / COHORT ADMIN.
HEALTH & GYM
ADMINISTRATION
CAFETERIA
COMMONS
KITCHEN
BLACK BOX
CIRCULATION / SERVICE
FABRICATION LAB / TECHNOLOGY
EXPLORATORY



Right:
Diagram showing ‘daisy wheel’ clusters with classrooms grouped around cohort collaboration and administration suites.

STEM CURRICULUM
PROGRAM SIZES & ADJACENCIES