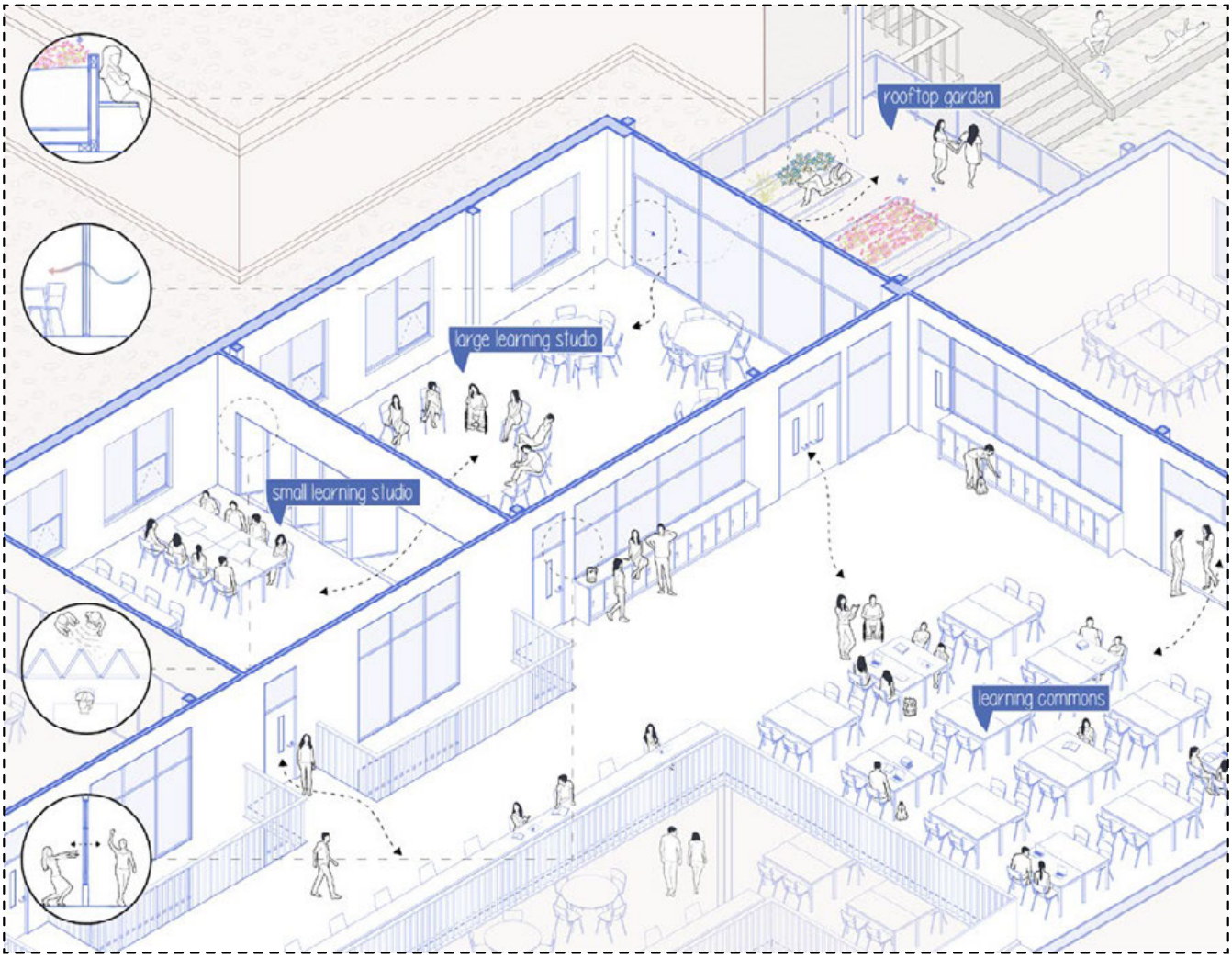


REIMAGINING HIGH SCHOOL

A Guide to Renewing Post-War
Secondary Schools in Waterloo Region

1.0 PROJECT INTRODUCTION

Throughout their schooling, students spend approximately 15,000 hours in classrooms, nearly as much time as they spend at home. This vast portion of their waking lives is spent in environments that profoundly influence their growth, identity, and long-term well-being.

Ontario's public education system is in a state of crisis; this is evident in the architecture of schools. Many of Ontario's secondary schools were built during the post-war era (1955-1975), and education continues to operate within buildings that reflect the values and priorities of that time. Education during this period was highly institutionalized, and buildings were designed with the intention of enforcing rigid standards of learning and behaviour. Classrooms prioritized control and uniformity to administer required tests and performance assessments effectively. Despite shifts in educational values and pedagogy, the architecture of secondary schools has remained largely unchanged for the past fifty years, failing to meet the evolving priorities and pedagogical needs of today.

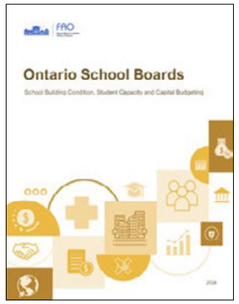


Fig. 1.1 Ontario School Boards Report released December, 2024

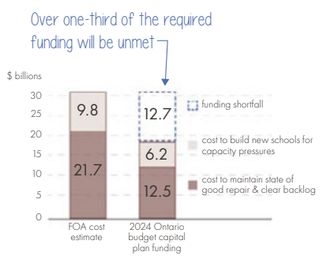


Fig. 1.2 FAO estimate of the 2024 Ontario Budget 10-year capital plan funding shortfall for school buildings, $ billions

Today, schools are overcrowded and in desperate need of repairs. In response to the situation, the Financial Accountability Office of Ontario (FAO) released the Ontario School Boards report on December 17, 2024, assessing building conditions, student capacity, and capital budgeting.[1] In this report, the OME proposes a ten-year solution plan that involves the use of portable classrooms, redrawing physical school boundaries or catchment areas, and the rapid construction of new schools according to a standardized template. While the OME may view these proposals as a solution to the crisis, the thesis argues that the proposals are only short-term fixes, reflecting a broader disinvestment in Ontario's public education; the Ministry of Education is allocating funding to quick fixes rather than investing in innovative and effective long-term solutions.

Educators and architects have since acknowledged that each student and school community has unique needs. While recent pedagogical advancements have been successfully integrated into well-funded, progressive, and newly constructed schools, there is still a gap in understanding how existing infrastructure, particularly post-war schools, can be upgraded to support these educational principles. The thesis research proposal seeks to develop a framework for reimagining secondary education by renewing an existing post-war secondary school in the Waterloo Region, Ontario. The proposal aims to support modern educational practices, embracing 21st-century learning, diverse learning styles, and community-based education. To guide this research, three interconnected scales are examined: the classroom, the school building, and the surrounding urban context.

[1] "Ontario School Boards: School Building Condition, Student Capacity and Capital Budgeting," 2024, https://fao-on.org/en/report/school-boards-capital-2024/.

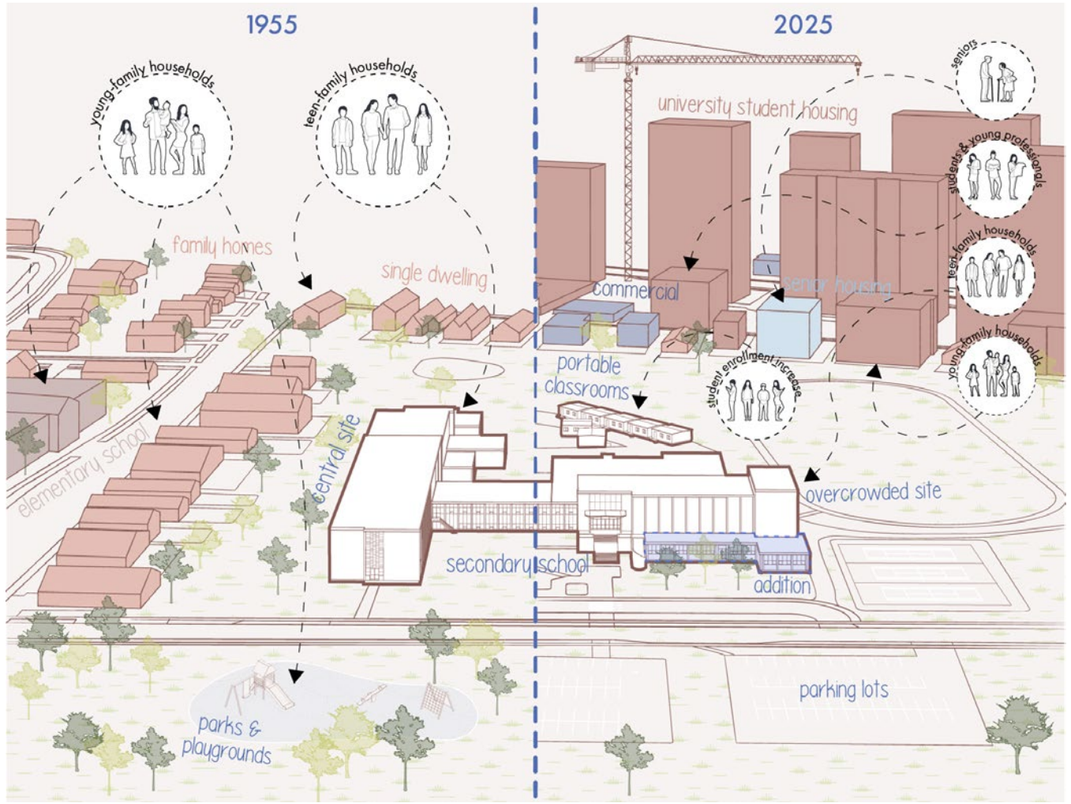


Fig. 1.3 The development of suburban communities around static secondary school sites

The research objectives are to assess the current state and future vision of public education in Ontario, understand the evolving needs of 21st-century learners, and explore how schools can support both student development and community well-being. The research culminates in a set of design guidelines that outline strategies for renewing existing school buildings into inclusive, adaptable, and community-oriented environments that reflect contemporary educational values. The primary guiding questions are: How can post-war secondary schools in the Waterloo Region, originally designed under outdated educational philosophies, be adapted for 21st-century learning? In what ways can spatial design foster a sense of belonging, engagement, and well-being among students? How can the schools establish a closer connection with their surrounding communities?

21st-century learning refers to an educational approach that goes beyond traditional memorization, focusing on problem-solving and the ability to apply knowledge to real-world situations. The aim is to integrate content with the 4C skills: critical thinking, communication, collaboration, and creativity.

More broadly, the thesis positions school renewal as an example of how thoughtful architectural adaptations can create more engaging, sustainable, and healthier environments for students.

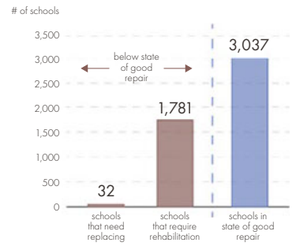


Fig. 1.4 FAO estimate of number of schools by condition rating as of March 31, 2024

2.0 ASSESSING THE WATERLOO REGION SCHOOL BOARD

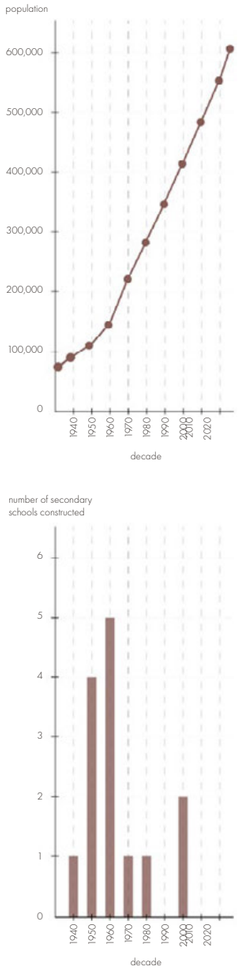


Fig. 1.5 Comparing population increase and secondary school construction in the Waterloo Region, 1940–2020

The Waterloo Region District School Board (WRDSB), one of the 72 school boards in Ontario grappling with overcrowding and deteriorating facilities, is the central focus of this thesis. While I did not grow up in Ontario, I have resided in the Waterloo Region for nearly six years and have observed a disconnect between the secondary schools, which once formed the heart of their communities, and the community they were meant to serve. It appears that while the cities have changed and progressed, these schools have been overlooked. Personal observations of disconnect, grounded by some initial research, guided my decision to focus on the WRDSB. The history, constraints, and projected statistics found while researching the WRDSB only justified the district selection.

The WRDSB comprises 16 secondary schools located in the urban areas of Kitchener, Waterloo, and Cambridge, along with the nearby townships of Wilmot, Woolwich, Wellesley, and North Dumfries.[2] Following World War II, the Waterloo Region, similar to much of North America, underwent significant population growth, prompting extensive infrastructure development to meet the needs of the expanding community.[3] Out of the 16 secondary schools in the WRDSB, 9 were built between 1955 and 1972.[4] Since 1972, over fifty years ago, only three secondary schools have been constructed in the Waterloo Region despite ongoing population growth.[5]

Today, the WRDSB faces challenges of supporting quality education for every student with aging facilities, ongoing population growth, and limited funding.[6] Future projections indicate that pressures on the WRDSB will only intensify over the next decade.[7] Currently, the WRDSB is the 10th largest school board in Ontario, with an enrollment of 64,153 students, yet it receives the 4th lowest per-student funding in the province.[8] With enrolment projected to reach 69,492 students by 2033-34, the school district faces an average annual growth rate of 0.7%, greatly exceeding the provincial average of 0.4%.[9]

2 Watson & Associates Economists Ltd., "Waterloo Region District School Board (WRDSB): Secondary Boundaries Updated Review" (Mississauga, ON, 2015).
3 Watson & Associates Economists Ltd., i.
4 Watson & Associates Economists Ltd., "Waterloo Region District School Board (WRDSB): Secondary Boundaries Updated Review," i.
5 Watson & Associates Economists Ltd., "Waterloo Region District School Board (WRDSB): Secondary Boundaries Updated Review."
6 Watson & Associates Economists Ltd., i.
7 "Ontario School Boards," 2024.
8 "Ontario School Boards: Enrolment, Finances and Student Outcomes - Financial Accountability Office of Ontario," Financial Accountability Office of Ontario, 2023, https://fao-on.org/en/report/fa2207schoolboards/.
9 "Ontario School Boards," 2024, 26.

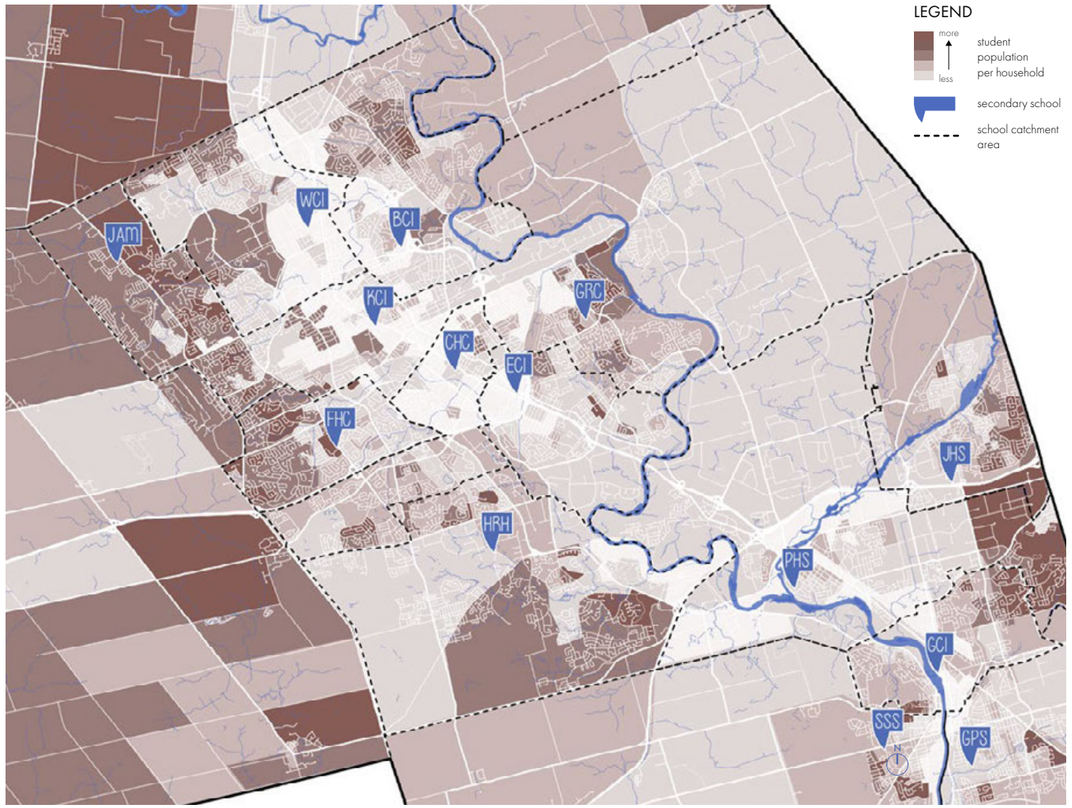


Fig. 1.6 Map of the WRDSB secondary student population per household and marked school locations

In total, the WRDSB oversees 123 school buildings, 39.0% of which are currently overcrowded, and 44.7% fall below the "state of good repair" standard.[10] While these statistics are concerning, they offer only a limited, abstract view of the true condition of the schools. The numbers reveal that repairs and expansions are urgently needed and that funding must be allocated efficiently in both time and cost. What these statistics cannot capture is the lived, day-to-day experience within these facilities, where a student may spend approximately 15,000 hours over the course of twelve years.[11] The quality of these environments directly affects learning, well-being, and equity; factors that extend far beyond numerical assessments.

10 "Ontario School Boards," 15.
11 Michael Rutter and Barbara Maughan, Fifteen Thousand Hours: Secondary Schools and Their Effects on Children (London: Paul Chapman Publishing, 1994), 1.

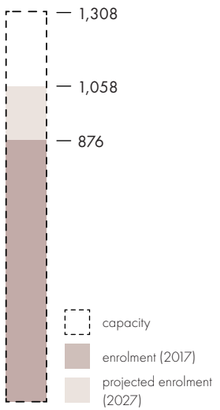
School Name	2021	2031
Bluevale (BCI)	47,000	53,000
Waterloo (WCI)	49,000	57,000
Sir John A. Mac. (JAM)	34,000	41,000
Kitchener-Waterloo (KCI)	49,000	59,000
Cameron Heights (CHC)	53,000	59,000
Forest Heights (FHC)	40,000	40,000
Eastwood (ECI)	35,000	40,000
Grand River (GRC)	39,000	47,000
Huron Heights (HRH)	58,000	75,000
Preston (PHS)	39,000	51,000
Galt (GCI)	30,000	34,000
Southwood (SSS)	26,000	29,000
Glenview Park (GPS)	41,000	49,000
Jacob Hespeler (JHS)	27,000	31,000
Elmira (EDS)	30,000	35,000
Waterloo-Oxford (WOD)	27,000	30,000
Region Total	**623,000**	**729,000**

Fig. 1.7 Waterloo Region population forecast (2021–2031) by secondary school

1957 GLENVIEW PARK SECONDARY SCHOOL

Site Size: 14.47ac
Building Size: 15,750 sq.m.
Facility Condition Index: 25%

Student Capacity vs Enrolment:



NUMERICAL ASSESSMENT

- [x] Boundaries Are Logistic
- [x] School Is Accessible
- [x] No Major Repairs Needed
- [x] School Is Not Overcrowded
- [ ] School Is Not Under Utilized

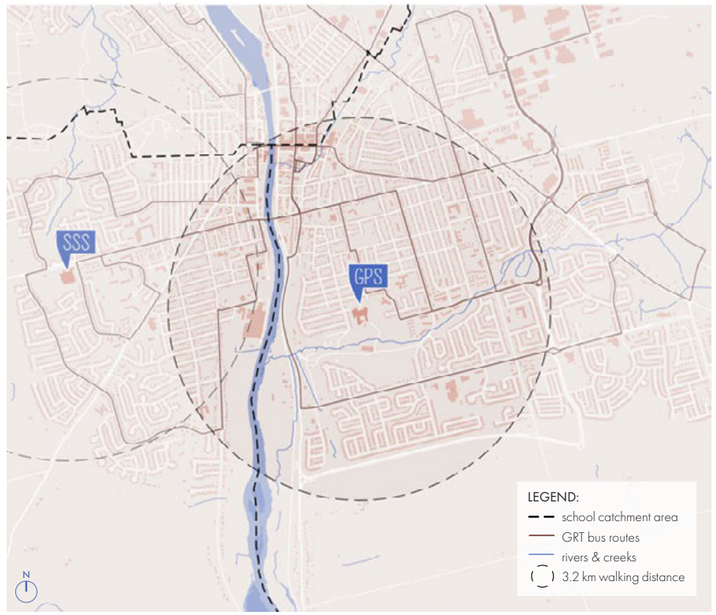
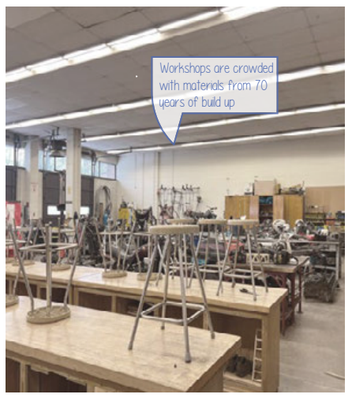


Fig. 1.8 Site map of Glenview Park Secondary School & student capacity vs enrollment data

Fig. 1.9 Photo demonstrating experience of arriving at Glenview Park Secondary School

POSITIVES CHALLENGES



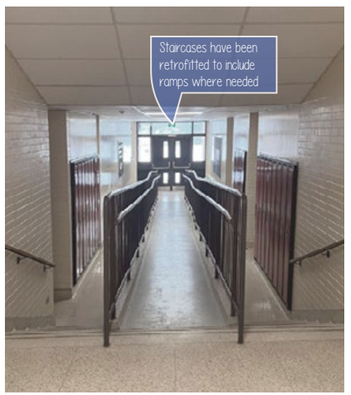


Fig. 1.10 Series of photos from site visit at Glenview Park Secondary School

PERSONAL NOTES:
(from site visits)

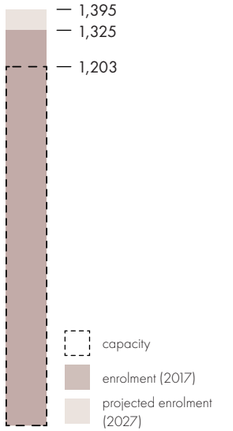
THE CHALLENGES:
- The building feels disconnected from the surrounding community, with little to no visibility from nearby streets.
- Continuous fencing blocks access to the adjacent park, reinforcing this sense of separation.
- It does not appear to be a building the community feels proud of or engaged with.
- The plain brick façade and uniform windows contribute to a lack of architectural identity.
- Multiple additions over time have resulted in confusing interior circulation.
- With the building now 75 years old, materials have accumulated in classrooms and storage areas, making the school feel crowded with "stuff."

THE POSITIVES:
- The greenhouse in the courtyard, where classes offer students credit for their involvement, provides meaningful opportunities for students to connect with nature.
- Ramps have been added on the ground floor to improve accessibility, and an elevator is planned for installation soon.
- Asbestos is being removed from classroom tiles on an as-needed basis.
- The building includes numerous specialized workshops that support hands-on elective courses.
- The area's population is slowly but steadily increasing, giving the school time to plan for expansion in a measured way.

1959 WATERLOO COLLEGIATE INSTITUTE

Site Size: 16.90 ac
Building Size: 16,625 sq.m.
Facility Condition Index: 31%
in the "worse" condition of assessed schools

Student Capacity vs Enrolment:



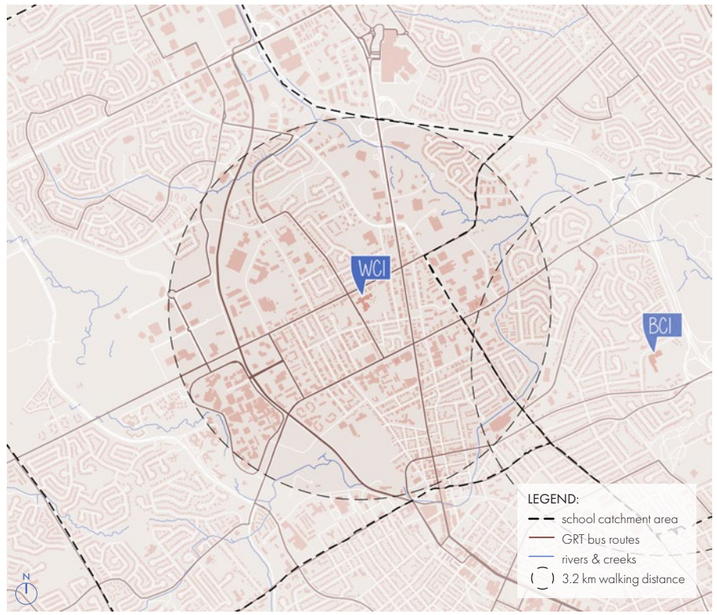


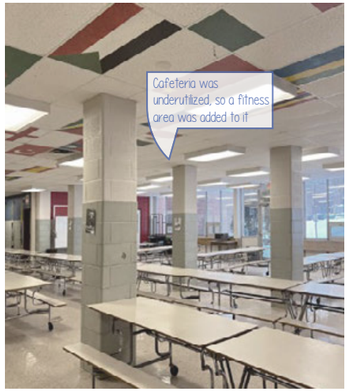
Fig. 1.11 Site map of Waterloo Collegiate Institute & student capacity vs enrollment data

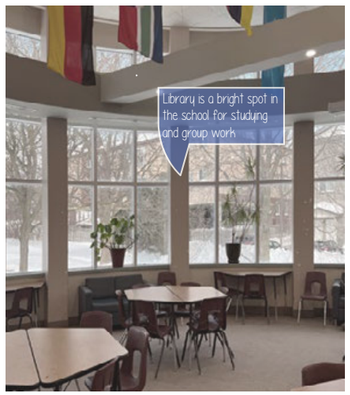
NUMERICAL ASSESSMENT

- ☐ Boundaries Are Logistic
- ☐ School Is Accessible
- ☐ No Major Repairs Needed
- ☐ School Is Not Overcrowded
- ☑ School Is Not Under Utilized

Fig. 1.12 Photo demonstrating experience of arriving at Waterloo Collegiate Institute

POSITIVES CHALLENGES





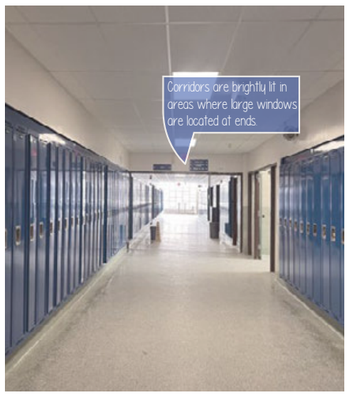


Fig. 1.13 Series of photos from site visit at Waterloo Collegiate Institute

PERSONAL NOTES:
(from site visits)

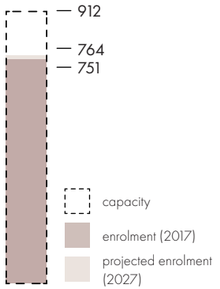
THE CHALLENGES:
- The school is located very close to Bluevale Collegiate Institute, resulting in an oversaturation of secondary schools in the area.
- The building is highly inaccessible, with no ramps or elevator. Its "half-level" configuration makes adding accessible features difficult in the current layout.
- The interior layout is confusing, in some areas, one must go down a set of stairs to reach spaces that are technically on upper levels.
- Approximately 40% of nearby housing is occupied by university students. Only 6% of the school's students live within the catchment area, and fewer than 30% are within walking distance.

THE POSITIVES:
- The building feels much brighter than other schools, with large classroom windows and vertical glazing at the ends of corridors.
- Vertical connections are created through basement windows that look down into the workshops from outside.
- Architectural features, such as the marble entrance and the circular glazed library, give the school a strong sense of character and identity.
- A strong sense of community is reinforced through painted murals and artwork throughout the building.
- Students and teachers actively adapt and repurpose spaces as needed. For example, part of the cafeteria was converted into a workout area, demonstrating creative reuse and a sense of agency.

1962 SOUTHWOOD SECONDARY SCHOOL

Site Size: 19.81 ac
Building Size: 12,450 sq.m.
Facility Condition Index: 30%

Student Capacity vs Enrolment:



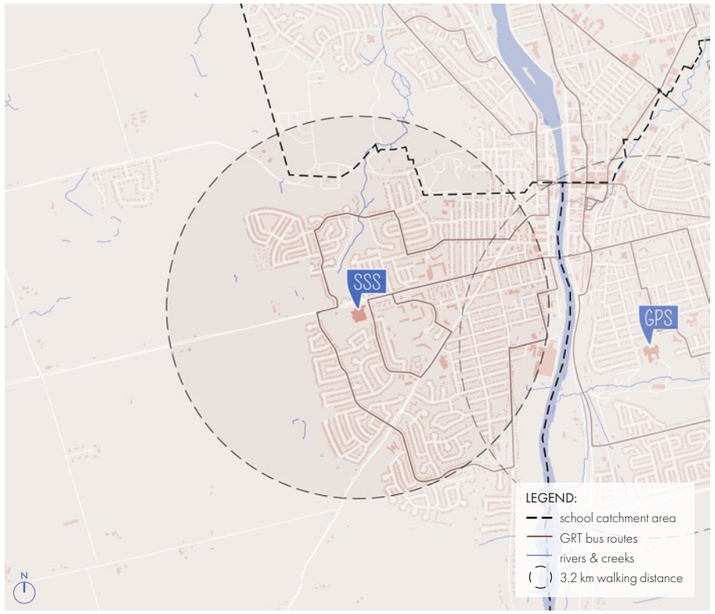


Fig. 1.14 Site map of Southwood Secondary School & student capacity vs enrollment data

NUMERICAL ASSESSMENT

- ☑ Boundaries Are Logistic
- ☑ School Is Accessible
- ☑ No Major Repairs Needed
- ☑ School Is Not Overcrowded
- ☐ School Is Not Under Utilized

Fig. 1.15 Photo demonstrating experience of arriving at Southwood Secondary School

POSITIVES CHALLENGES

Fig. 1.16 Series of photos from site visit at Southwood Secondary School

PERSONAL NOTES:
(from site visits)

THE CHALLENGES:

- As a school with low enrolment and excess capacity, the building receives limited funding.
- Upper classrooms often overheat due to outdated construction methods and the absence of a cooling system.
- When classrooms become too hot, they are simply closed, forcing teachers to relocate their classes elsewhere.
- The school's rural location makes it difficult to cultivate strong connections with a surrounding community.
- As a small school, social and informal gathering spaces are limited, even the front lobby is designed primarily as a circulation space rather than a place to greet.

THE POSITIVES:

- Additions over the years have created two interesting courtyards that students can use during breaks to spend time outdoors.
- Distinctive windows make the building feel unique and easily identifiable.
- When funding is available, the school has demonstrated its ability to make meaningful improvements, such as planting a school forest and adding universal washrooms, showing positive change over time.
- The surrounding community is relatively stable, and the school sits on a large site, creating opportunities to thoughtfully respond to community and student needs by adding new amenities (such as a community centre, athletic fields, or a daycare) on the existing property.

4.0 OUTLINING THREE SCALES OF PEDAGOGY

> *In itself architecture cannot change anything; what it does do is to prepare the way for change.*[1]
>
> — Giancarlo De Carlo, Italian architect and anarchist.

The values, beliefs and pedagogical practices of a school serve as the foundation for a great learning environment and shape the use of learning spaces.[2] As priorities shift to emphasize student well-being, critical thinking, and broader measures of success, architectural design has the potential to respond in meaningful and impactful ways. While revising Ontario's educational values and pedagogies is beyond the scope of this thesis, the design component will focus on architectural strategies that embody and advocate for contemporary pedagogical approaches. The refocused outcome adopted of the secondary school is to help students graduate with a strong sense of mattering, emerging as confident, capable individuals with diverse and adaptable skills. To realize these aspirations, the design strategy draws on three complementary pedagogical theories, each influencing a distinct scale of intervention within and around the school building.

STAGES OF CHANGE FOR IMPACTFUL EDUCATIONAL TRANSFORMATION:

1. KNOWLEDGE & SKILLS
driven by: students, school boards & ministry of education
The first step involves assessing the desired outcomes for students as they transition from secondary school

2. PEDAGOGY & CURRICULA
driven by: teachers & school boards
Next, the teaching context and instructional approaches should be adapted to support desired outcomes

3. ASSESSMENTS
driven by: students, teachers & ministry of education
Assessment and grading should then reflect and reinforce the skills & context students are actively learning and practicing

4. TECHNOLOGY
driven by: students, teachers & school boards
Students must also have access to the appropriate equipment needed to develop specific skills

5. LEARNING ENVIRONMENT
driven by: students, teachers, community & architects
Lastly, the learning environment should be designed to facilitate the desired skills, instructional approaches, assessment methods, and the integration of relevant technology

1 Ole Bouman and Roemer van Toorn, "Architecture Is Too Important to Leave to the Architects. A Conversation with Giancarlo De Carlo," *Archis*, 2005, https://archis.org/volume/architecture-is-too-important-to-leave-to-the-architects-a-conversation-with-giancarlo-de-carlo/.

2 Murray Hudson and Terry White, *Planning Learning Spaces: A Practical Guide for Architects, Designers and School Leaders* (Laurence King Publishing, 2019), 25.

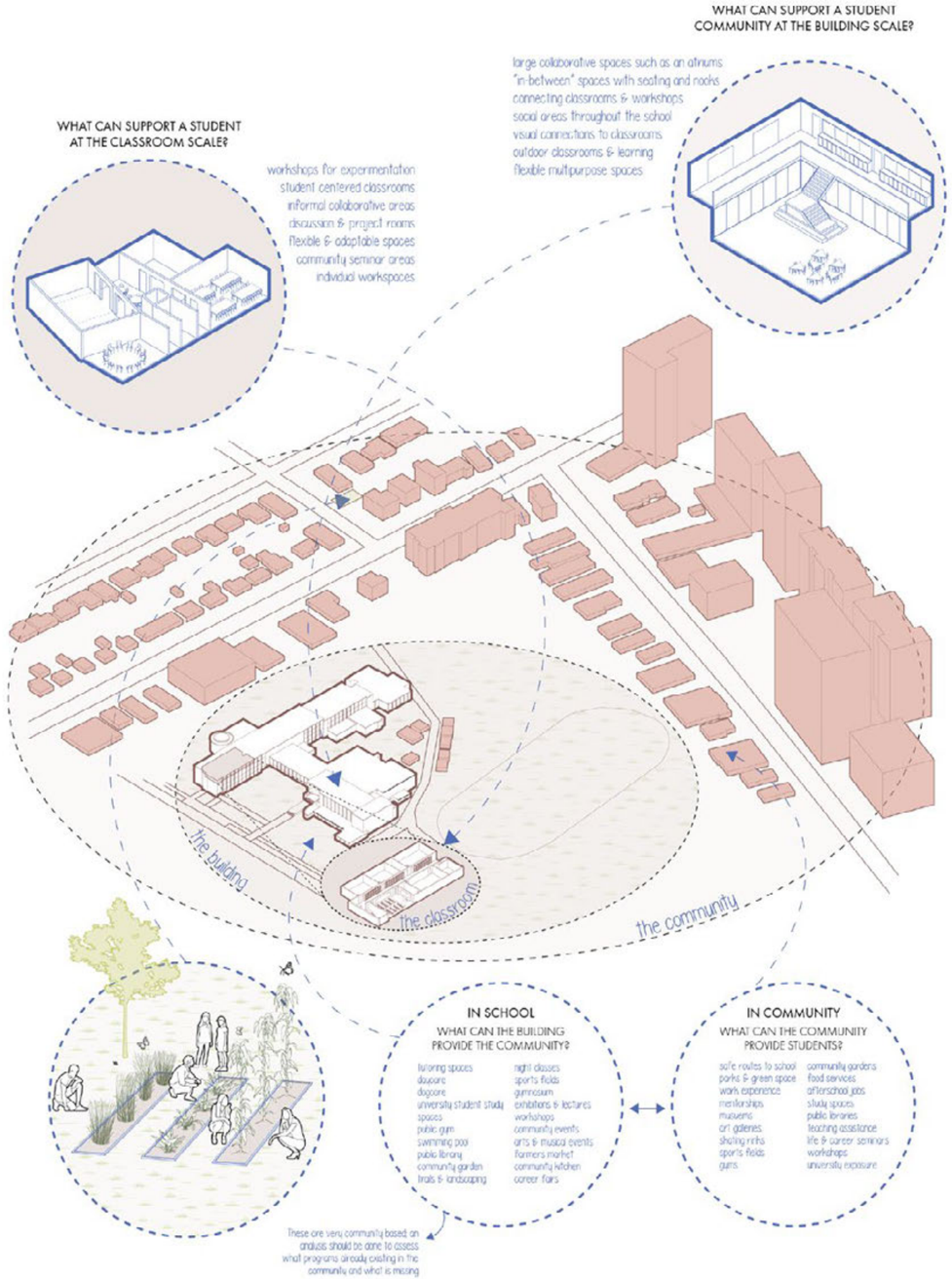
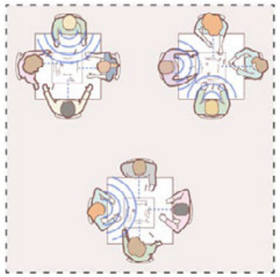


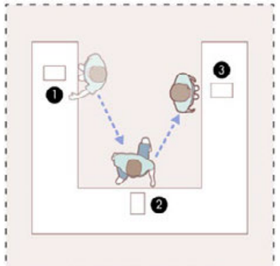
Fig. 1.17 Diagram relating three scales of pedagogy to architectural space

1 VERBAL



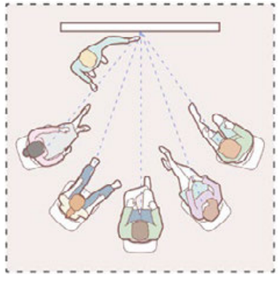
speaking, listening, writing

2 LOGICAL



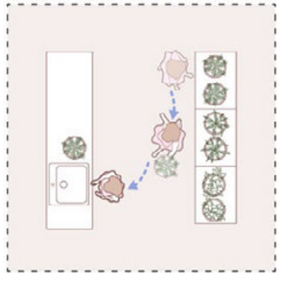
steps, order, goal orientated

3 VISUAL



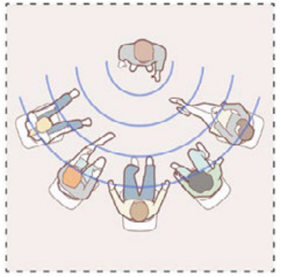
drawings, pictures, reading

4 KINESTHETIC



hands on work, dancing, movement

5 MUSICAL

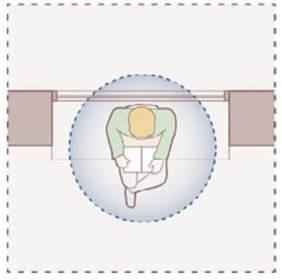


sound, rhythm, music

6 INTERPERSONAL

collaboration, discussions, relating

7 INTRAPERSONAL



independent, self-reflection, quite

8 NATURALIST

patterns in nature, understanding

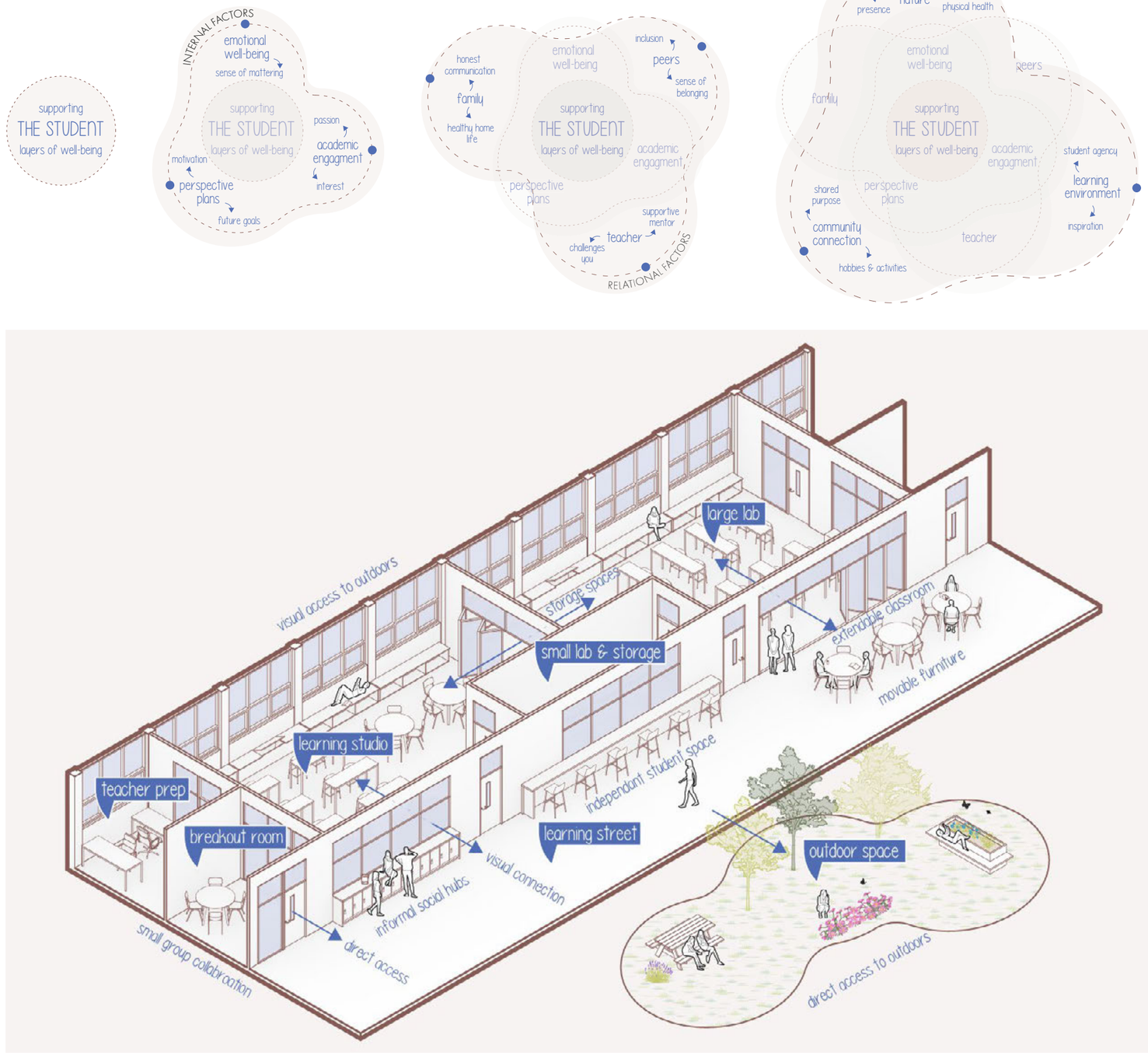


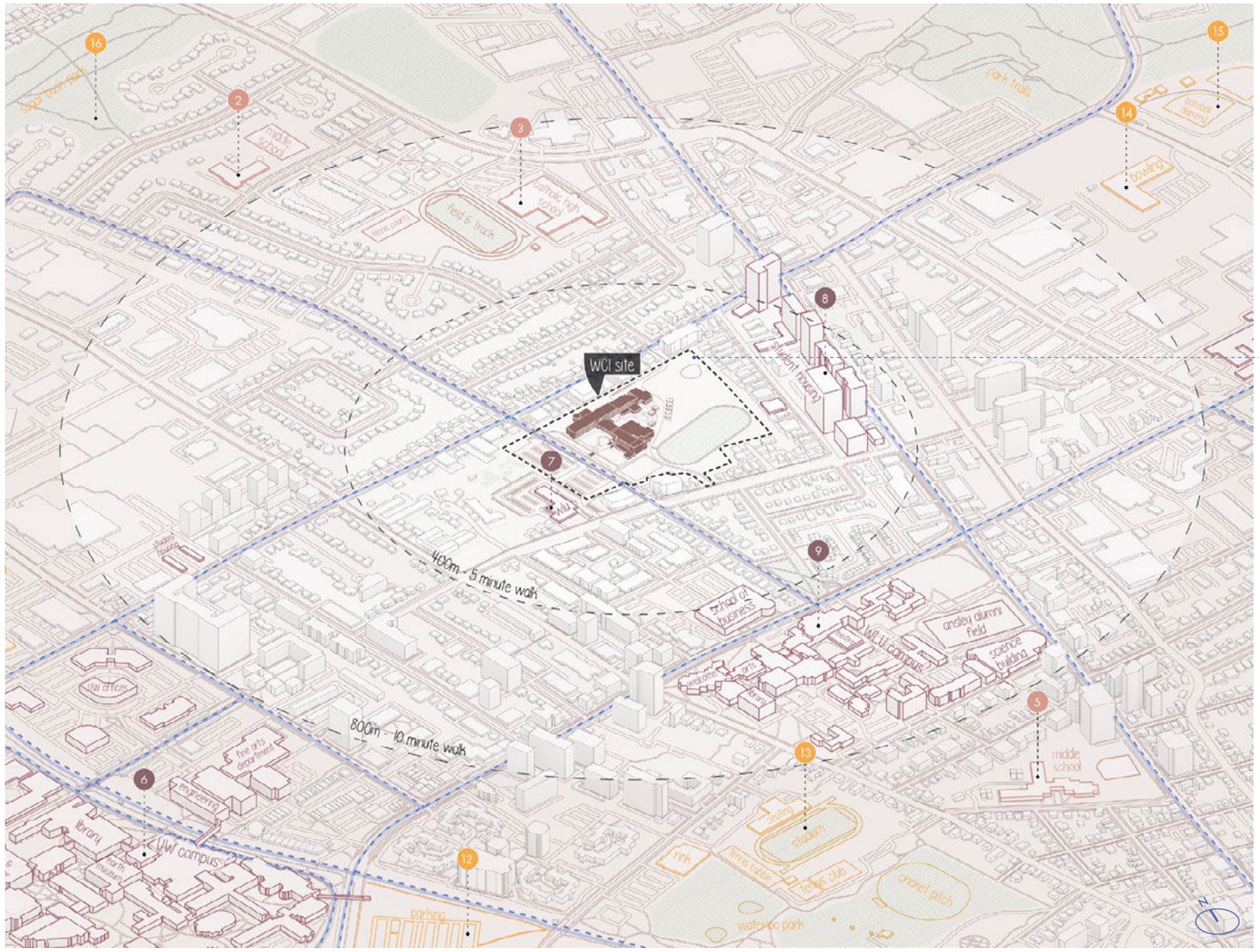
Fig. 1.18 Example of the learning suite & the eight types of learners

5.0 WATERLOO COLLEGIATE INSTITUTE

The school selected within the Waterloo Region District School Board (WRDSB) for analysis, and to serve as the foundation for the design guidebook, is Waterloo Collegiate Institute (WCI). This school, which has been the subject of ongoing discussions about redevelopment and adaptation since 2012, has seen little to no change in the last 25 years.

At the city scale, WCI is centrally located within the educational district, positioned between the University of Waterloo main campus and Wilfrid Laurier University. With the rapid development of student housing around the site, the community has undergone a significant demographic shift since the school's construction in 1959. Once a low-rise, family-oriented neighbourhood, the area is now dominated by mid- to high-rise developments and populated primarily by young adults, including university students and early-career professionals.

One of the most significant challenges of the WCI building lies in its series of half-level differences between floor plates. Upon entering the school, individuals must immediately climb stairs to reach the main office or any classroom, making the building entirely inaccessible. The layout prevents installation of a single elevator capable of serving all levels. As the WRDSB faces growing pressure to comply with Ontario's accessibility standards, demolition has emerged as a potential solution, particularly in light of the redevelopment strategies outlined in the previously mentioned feasibility study.



WCI is surrounded by numerous amenities, including theaters, pools, and soccer fields However, most of these are owned by the University of Waterloo or Wilfrid Laurier University While these neighboring campuses offer great potential for connection, secondary students and community members also need a hub of their own, one that does not rely on access to private university facilities. The WCI site has the potential to become a public community hub, providing a 24/7 accessible space where students and community members can gather, enjoy amenities, and connect with one another.

Compared to the rest of the immediate neighborhood, this site is quite large and filled with potential.

LEGEND

NEIGHBOURING SCHOOLS

1 St. Jude's School
2 Winston Churchill Public School
3 St. David Catholic Secondary School
4 WRDSB Summer School
5 MacGregor Senior Public School

UNIVERSITY & COLLEGE SPACES

6 University of Waterloo Campus
7 Wilfrid Laurier University MIE Building
8 Student Housing Collective
9 Wilfrid Laurier University Campus
10 Conestoga College

RECREATIONAL

11 Virtual Reality Arcade
12 Waterloo Park
13 University Stadium
14 Bowling Alley
15 Hillside Park
16 Sugarbush Park

Walking Radius
Bus Routes

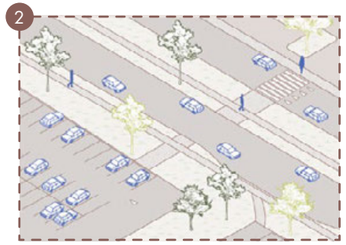
Fig. 1.19 Schools, universities, colleges and recreational infrastructure around WCI

Fig. 1.20 Existing site analysis

1

FENCING AROUND PRIVATE LOTS

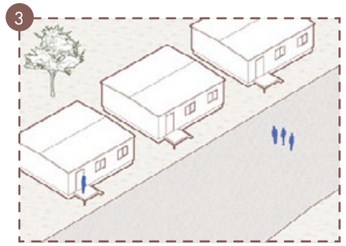
The surrounding lots are blocked from the school property with continuous fencing for privacy reasons. With the lack of landscaping, this fencing makes the poorly maintained school site feel isolated and uninviting to the surrounding community.



2

VEHICLE PRIORITIZED ENTRANCE

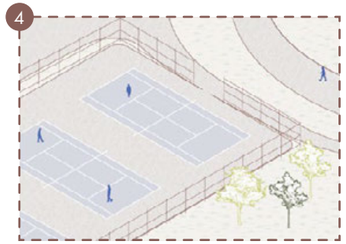
The main entrance is located on a quiet street designed primarily for vehicle access. With the drop-off zone and student parking directly across the street, experience of arriving at the school feels diminished. The cars and lack of social spaces leave little opportunity for pause, gather, or socialize.



3

PORTABLE CLASSROOMS

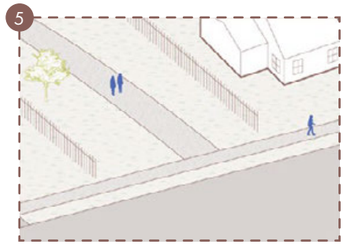
A large part of the site is occupied by portable classrooms, which not only takes up open space but also create a physical disconnect between students and the main building. This separation can make students feel excluded and complicates circulation across the site.



4

RECREATIONAL ACTIVITIES

Recreational amenities such as a tennis court and track are included on site. While valuable for students and the community, they appear dull and poorly maintained, all needing upgrades. Additional amenities, such as a dog park, could also be introduced to better serve community needs.



5

SITE ACCESS

Access to the site is often hidden and easy to overlook, tucked between the fences of private lots. The entry points themselves are uninviting and lack any sense of excitement or engagement.

EXTERIOR CONDITIONS

The school's entrance is in good condition, featuring modern architectural elements such as the covered porch and stained glass window framing that stand out as key parts of its identity

The presence of stairs shows that the building lacks proper mobility accessibility

The formality and symmetry of the landscaping gives the building an unapproachable appearance to the wider community

Fig. 1.21 Waterloo Collegiate Institute front entrance

This school was officially designated by the government as needing renewal in 2016. However, repairs have been limited, overlooking urgent issues like accessibility, student comfort, and community integration.

While the sign indicates that change is on the way, the effort is minimal compared to what is truly necessary. At the same time, the sign risks being misunderstood as branding the school as "bad."

The classroom facade shows wear and the repetition in the floor plan.

In 2024, the WCI solar panels generated 10,833 kWh, saving the school $8,688.17 in energy.[14]

[14] "SolarVu Solar PV Monitoring - Waterloo Collegiate Institute - Waterloo, ON," accessed August 14, 2025, https://www.waterlooci.solarvu.net/green/solarVu.php?dr=waterloo-ci&ac=waterlooci.

Fig. 1.22 Top: Ontario *School Facility Renewal Project* sign. Bottom left: south facade classroom windows. Bottom right: south facade solar panels

Portable classrooms place students in challenging situations. In winter, they may have to walk through cold, snowy conditions multiple times a day to reach their learning environment. The lack of accessibility further limits participation in these spaces.

Fig. 1.23 Entrance of a portable classroom on site

The back of the building serves as the main circulation route for students accessing portable classrooms and sports fields. However, it also functions as staff parking and garbage storage, creating an unpleasant and uninviting location for student movement.

This façade reveals the layered history of the building, displaying the various additions and modifications made over time.

Although the school building and site have remained largely unchanged, the surrounding urban fabric is evolving, with many new developments focused on university student housing.

Lots of key site space is occupied by the portable classrooms

Fig. 1.24 Top: back of school condition. Bottom left: rows of portable classroom. Bottom right: sports field and surrounding developments

INTERIOR CONDITIONS

The entrance is in good condition, decorated with stained glass windows and marble floor tiles.

The lack of signage makes the building difficult for visitors to navigate.

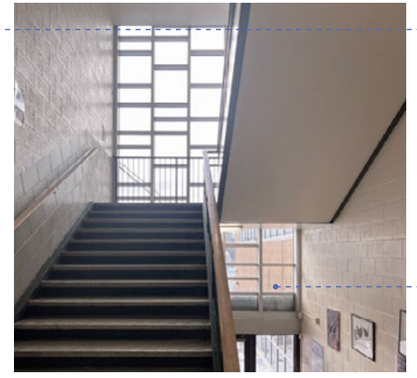
The current entrance is purely functional, serving only as a circulation space. Its relatively small size makes it restrictive, leaving no room for seating or other welcoming features.

The trophies and plaques at the entrance reveal a rich history of generations achieving great things throughout their high school journeys. These awards highlight individual talents and help foster a sense of mattering within a large school community.

Fig. 1.25 Main entrance foyer

The theatre space was recently renovated and is in excellent condition, requiring no changes. It has a seating capacity of approximately 430 people.

What if the theatre was an accessible space for the community to rent outside of school hours?



The library is a bright, well-maintained space. Extending access to the community outside of school hours would be beneficial, and providing direct access to the exterior would further increase its usability.

The stairwell windows brings a lot of natural light into the corridors.

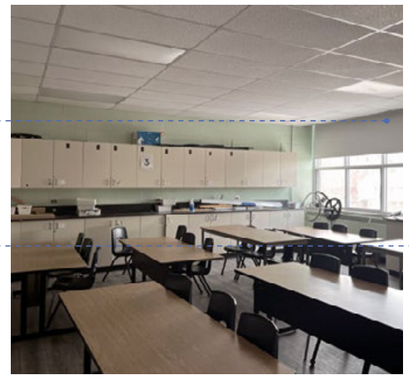
Fig. 1.26 Top: theatre space. Bottom left: library seating. Bottom right: stairwell

Most classrooms have a similar layout and atmosphere, which limits the potential for diverse learning experiences.

The large windows provide plenty of daylight. However, in the warm weather they let in too much heat. Without cooling, this makes the classrooms very uncomfortable.

The blinds provide a useful option for students and teachers to control light in the space.

Many of the desks appear to be in good condition and are flexible enough to support different classroom layouts.



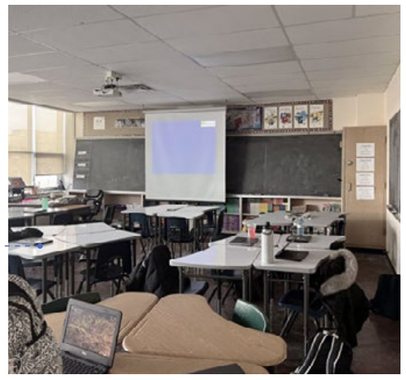
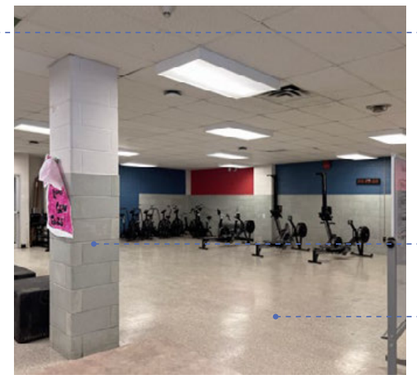


Fig. 1.27 Top: classroom with single desks. Bottom left: classroom with group desks. Bottom right: classroom with clustered desks

The corridors are confusing to navigate through... they all look the same.

With no seating, social areas, or views into classrooms, the corridors function purely as a circulation space...
But, given their generous size, could they be reimagined as lively social & learning spaces?

Cafeteria use is minimal, with most students choosing to eat on the corridor floors, in classrooms, outside or even in their cars. Could this space be used as something else?



Steel columns are fire-protected with CMU.

Extra cafeteria space has been converted into a workout area.

Fig. 1.28 Top: third floor corridor. Bottom left: cafeteria. Bottom right: workout space in cafeteria

6.0 A CASE FOR REUSE AND ADAPTION

traditional architectural project:

1. Start with a program idea

2. Design the structure to support

retrofit project:

1. Start with the existing structure

2. Determine new needed programs

3. Adapt existing structure to support the new programs

Post-war secondary schools in Ontario are not inherently "precious." Their historical significance is limited and, in most cases, their architectural features are unremarkable. This makes them strong candidates for adaptive reuse: elements can be selectively retained, modified, or expanded, while those without functional value can be removed to accommodate new programs. Despite the challenges, this approach is worthwhile. Buildings embody not only carbon, but also memory and cultural impact, and preserving both sustains continuity between past and future learning environments while reinforcing a sense of identity within the community.

Like many schools in Ontario, WCI has been maintained through short-term fixes aimed at keeping it functional until sufficient funds are allocated for a complete rebuild. This thesis argues that, with careful design, the existing building can once again exemplify quality education through adaptive reuse rather than demolition. Given the building's overcapacity and accessibility challenges, the recommended approach is a comprehensive addition and adaptive reuse project. Moving forward, the school must be treated as a whole, with its physical form, educational purpose, and community role considered together. True transformation cannot occur through fragmented maintenance; it requires a coordinated, long-term redesign that fully reimagines the existing structure and its potential.

The redesign begins with a demolition drawing. The central wing is proposed for removal, as it currently contains two stair transitions between half-levels, creating barriers to accessible circulation. This area primarily houses administrative functions and features extensive glazing through a curtain wall system, offering limited programmatic value and an inefficient envelope. Its removal creates an opportunity to reimagine it as a connective element that unifies split levels into an accessible floor plane and establishes clearer spatial organization.

Throughout the rest of the building, most interior walls, lockers, and equipment are proposed for demolition, while newer areas such as the auditorium are retained. Since interior elements typically have short lifespans, these components are well beyond their intended use and require updating. The most important elements to retain are the structure and envelope, including the foundation, steel framing, exterior walls, windows, and roof. These systems remain in good condition and contain significant embodied carbon. Preserving them reduces environmental and financial costs while allowing the building to support future use and extend its service life for decades.

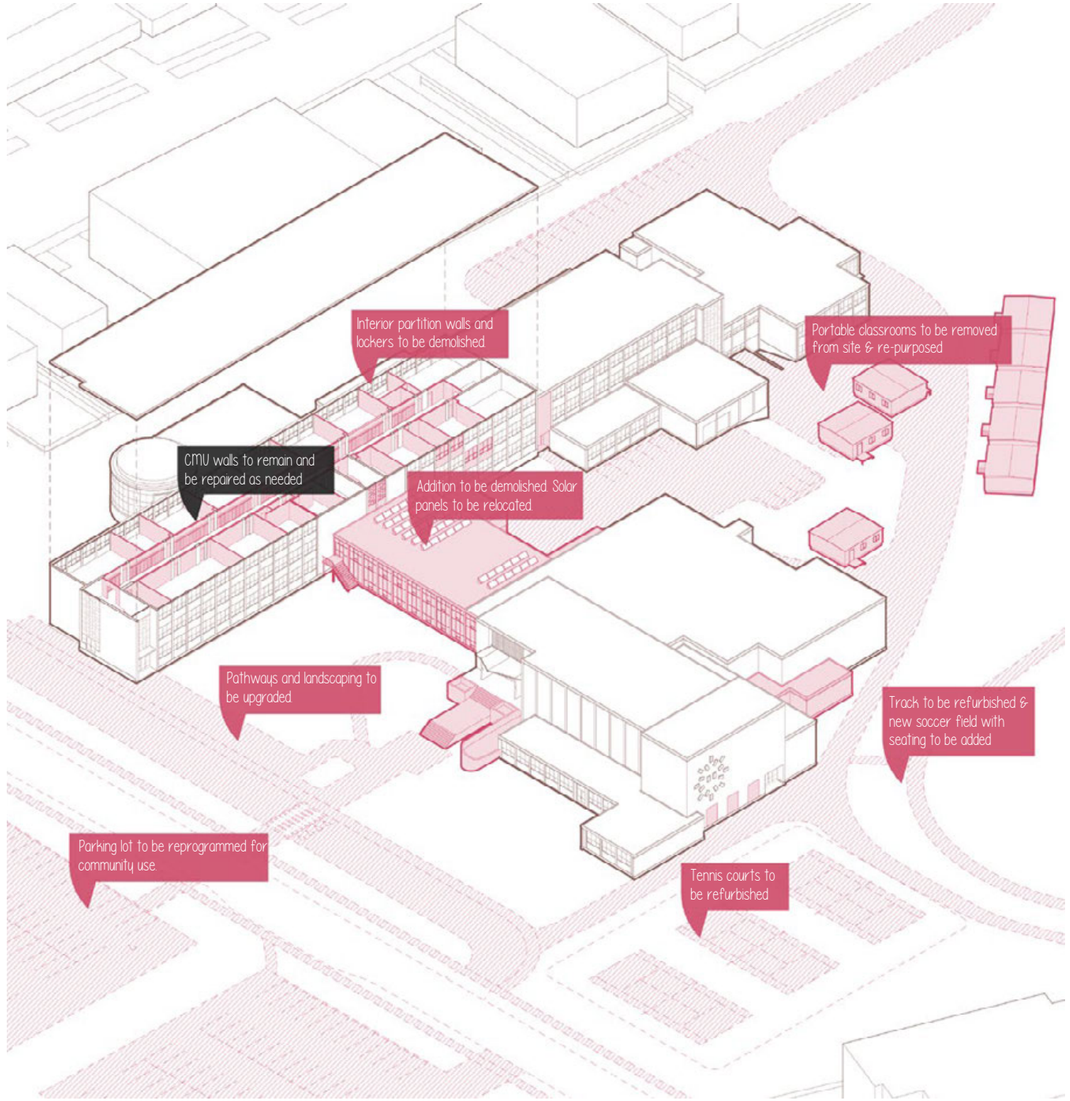
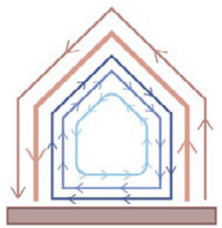


Fig. 1.29 Demolition diagram of WCI



Buildings account for over 40% of global carbon emissions. With approximately 1,781 schools in Ontario needing upgrades, demolishing and rebuilding these structures is neither sustainable or fiscally responsible. Instead, school boards have an opportunity to lead by example, demonstrating how holistic reuse and adaptive design can significantly reduce carbon emissions.

Fig. 1.30 Diagram of Frank Duffy's "shearing layers of change" concept

7.0 DESIGN PROPOSAL

Fig. 1.31 Proposed back of building view

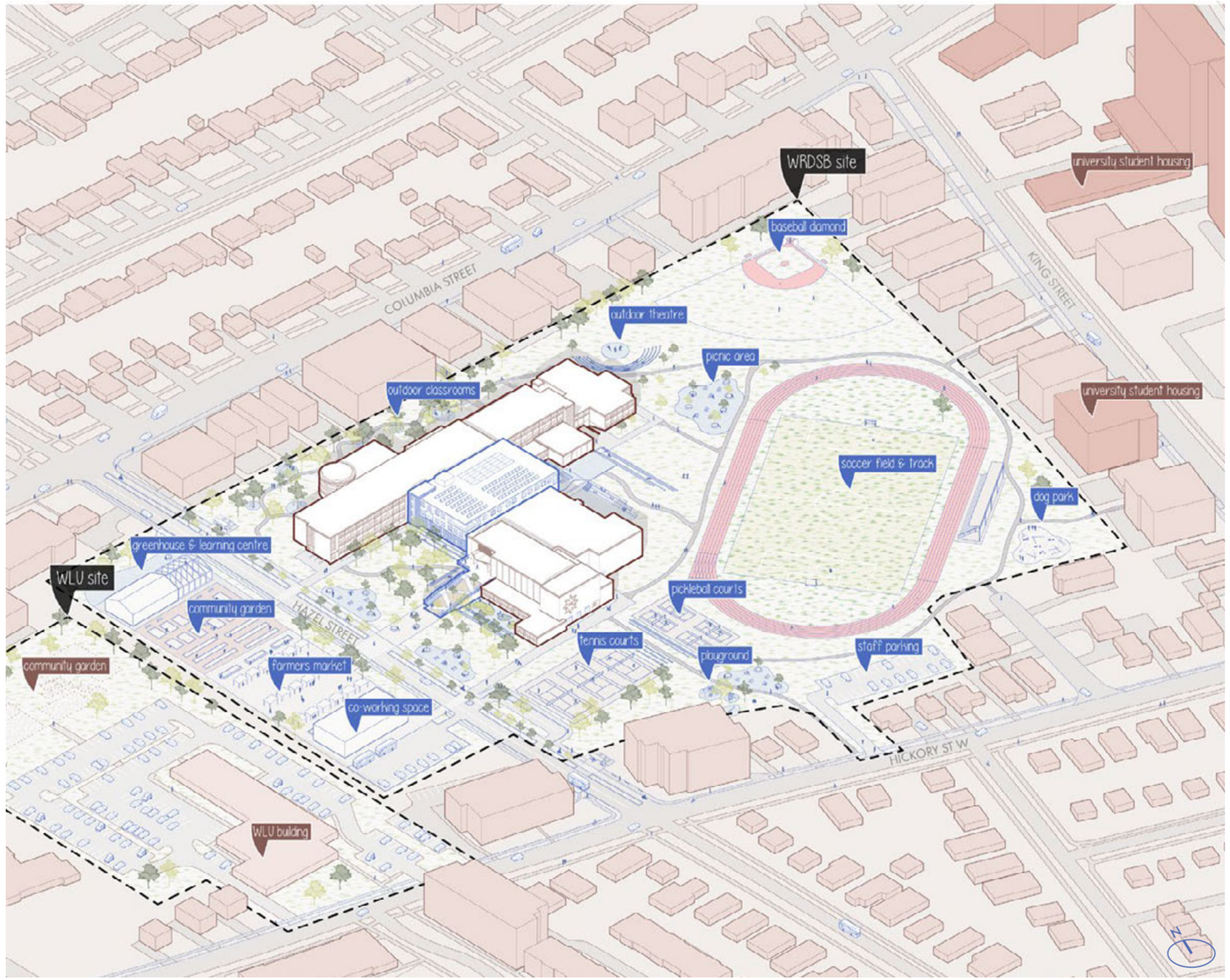


Fig. 1.32 Proposed site axonometric

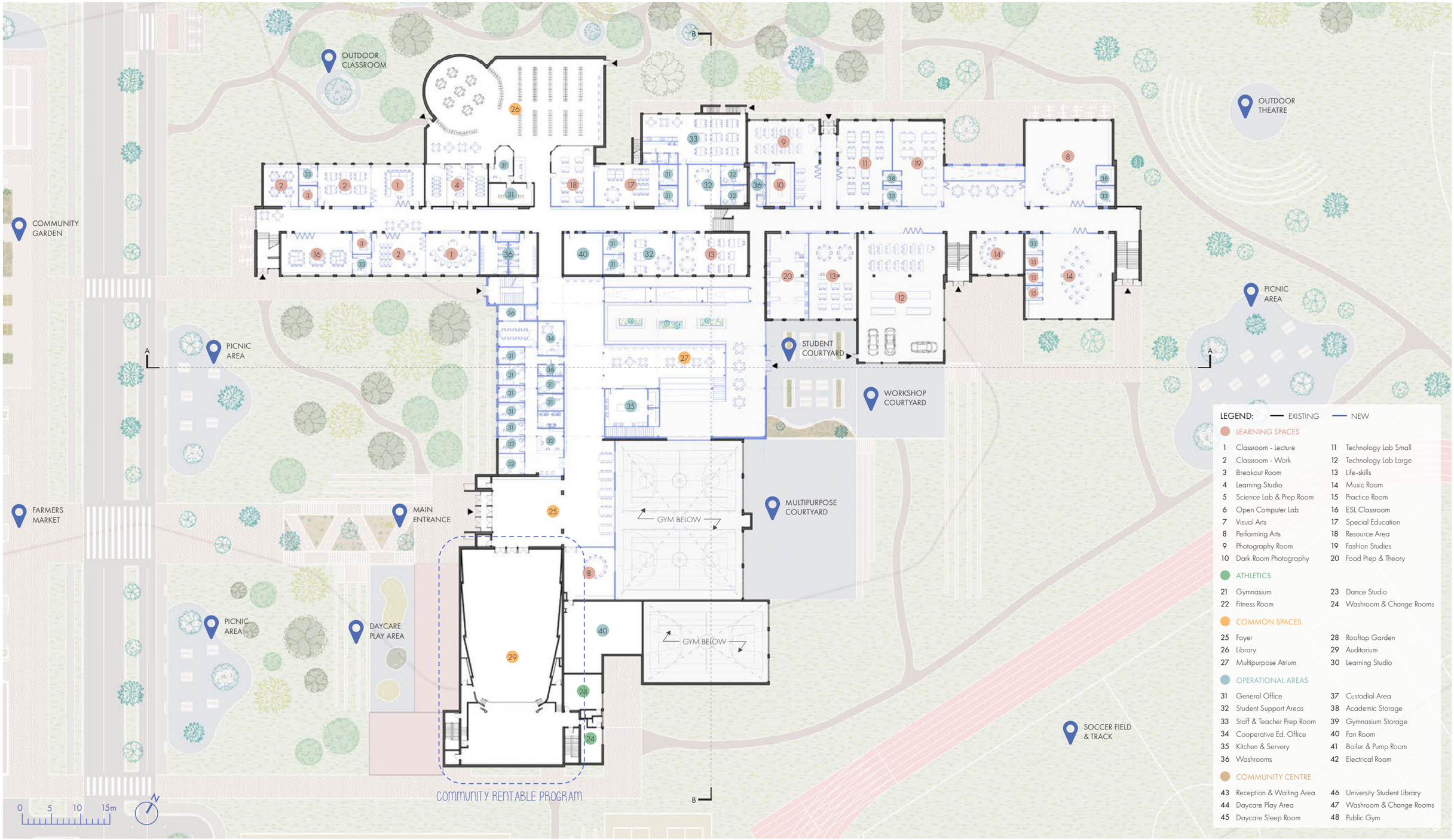


Fig. 1.33 Proposed ground floor plan

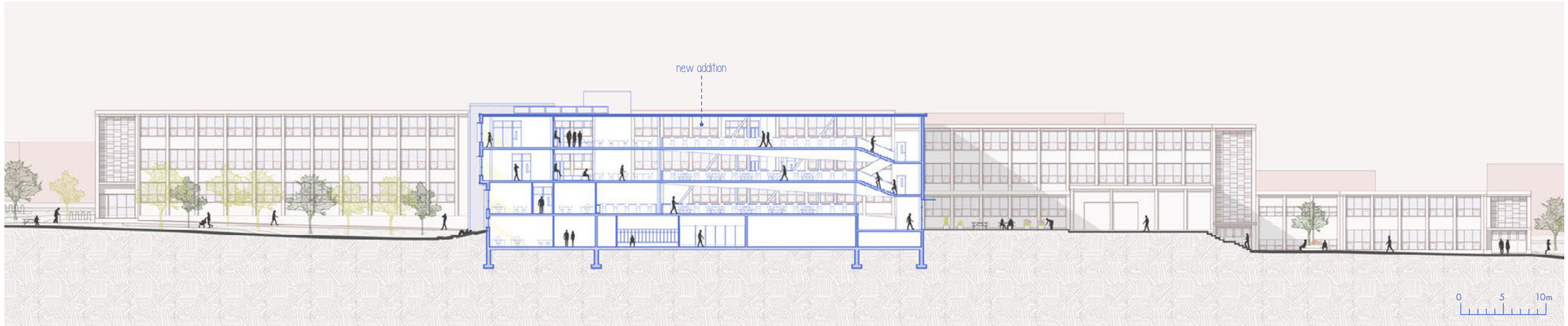


Fig. 1.34 Proposed section AA

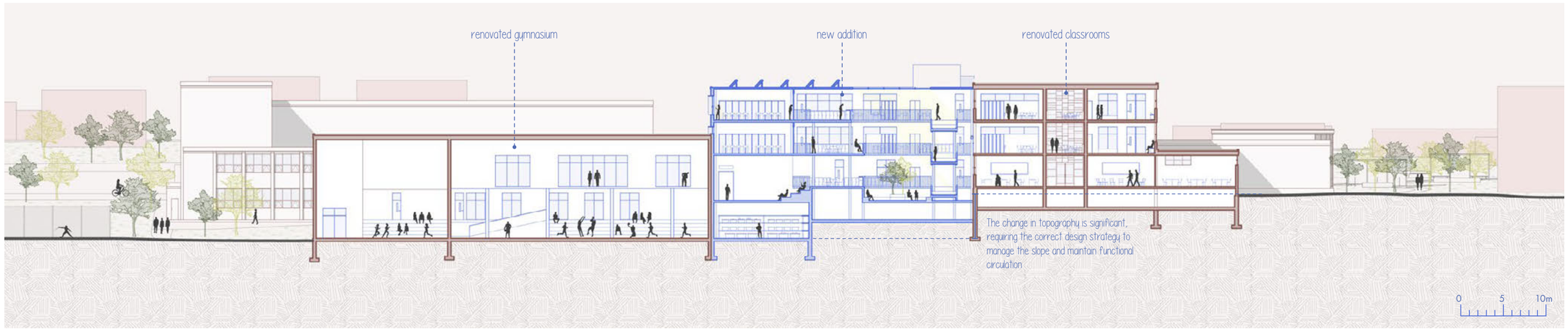
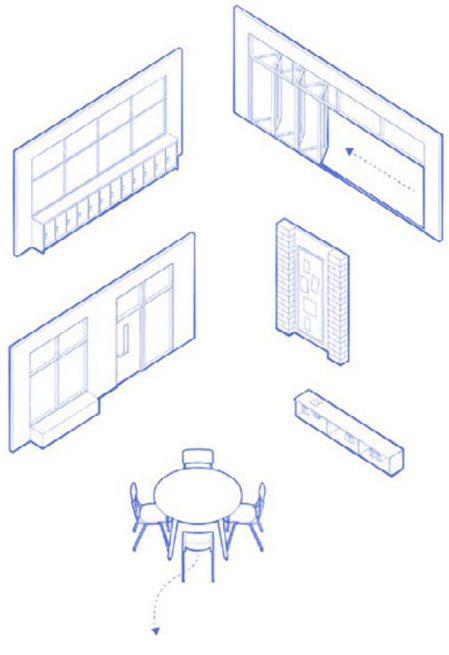


Fig. 1.35 Proposed section BB

7.1 Designing for Students Success

- the classroom scale

Classrooms, niches, and corridors serve as students' home bases. When designed and operated thoughtfully, these spaces can become safe environments where students can retreat, develop skills, and connect with others. In such close-knit settings, it is essential that every student feels safe, included, and empowered to engage in learning, personal growth, and a sense of mattering. Pedagogical strategies, contextual assessments, and design must accommodate diverse learning styles, ensuring that each student is supported through methods best suited to their individual needs. Features such as transparent, glazed classroom walls foster curiosity and visual connection, while movable partitions enhance flexibility, allowing spaces to adapt to different learning activities. This study focuses on redesigning three small-scale areas of the school: classrooms, learning studios, and corridors.



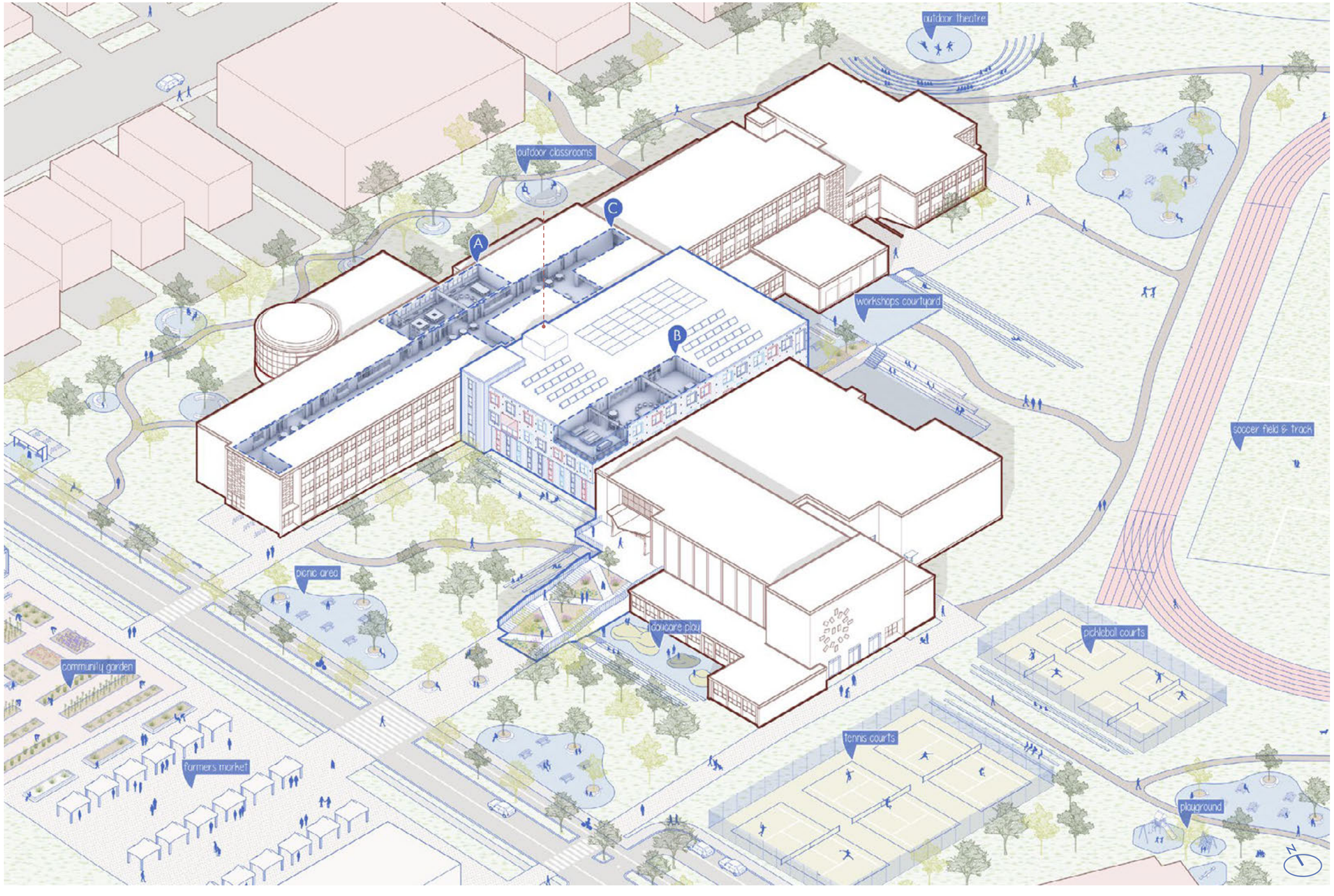


Fig. 1.36 Proposed site axonometric highlighting areas of focus for the classroom scale redesign

A CLASSROOMS - existing building wing

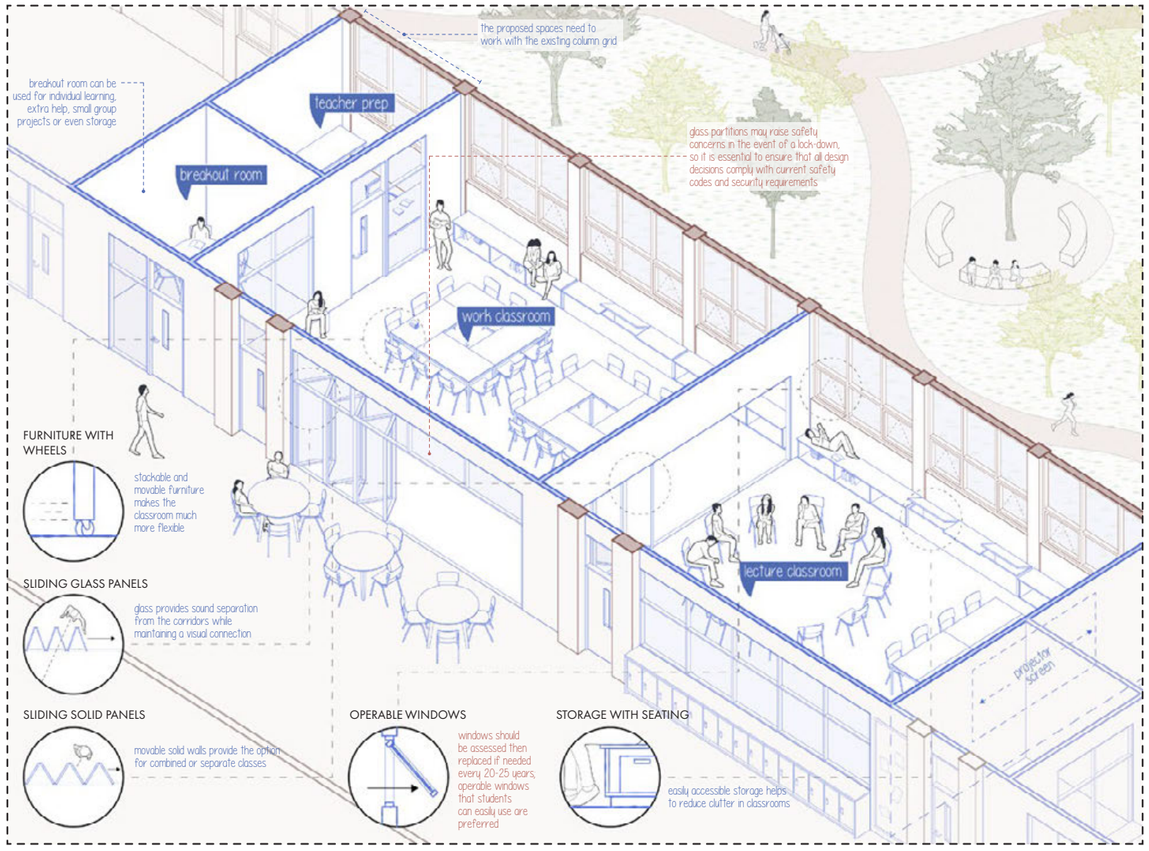
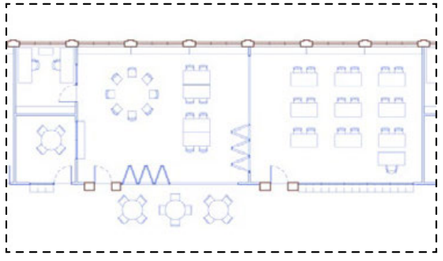


Fig. 1.37 Proposed classroom design

WHAT IS A CLASSROOM?

A school does not require a single standardized classroom. Instead, it benefits from a range of classroom types—like a learning suite—each supporting different modes of learning. Varying scale and flexibility encourages exploration while still meeting curricular needs. Adaptable elements, such as movable walls, allow spaces to expand or contract for different activities and group sizes. Even within an existing modular structure, variation is achievable, though somewhat constrained.



B LEARNING STUDIOS - addition wing

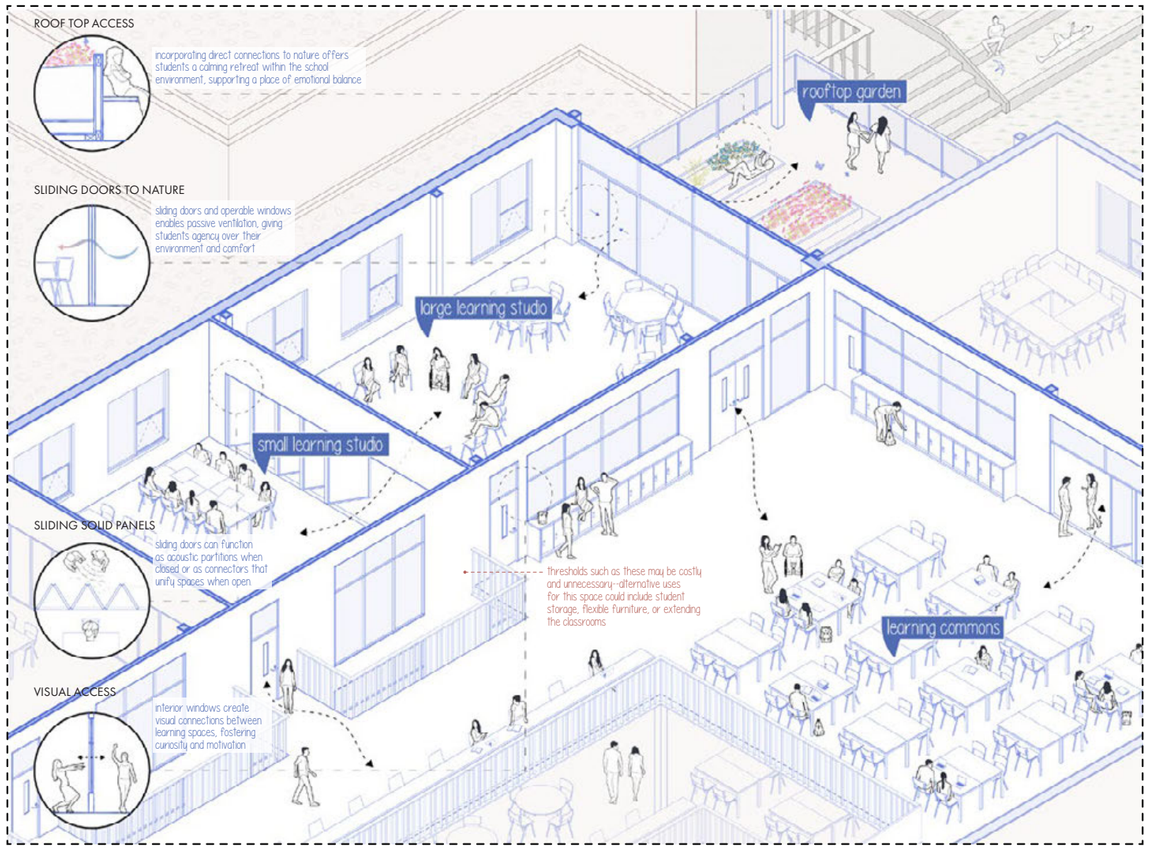


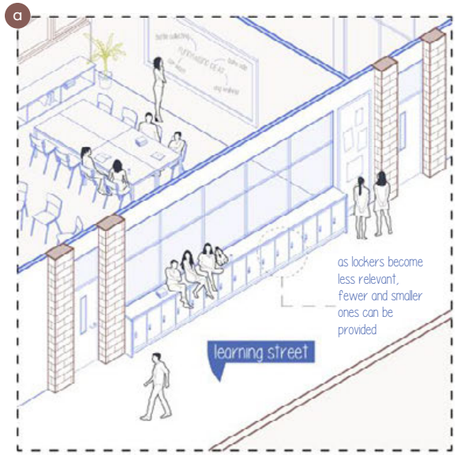
Fig. 1.38 Proposed learning studio design

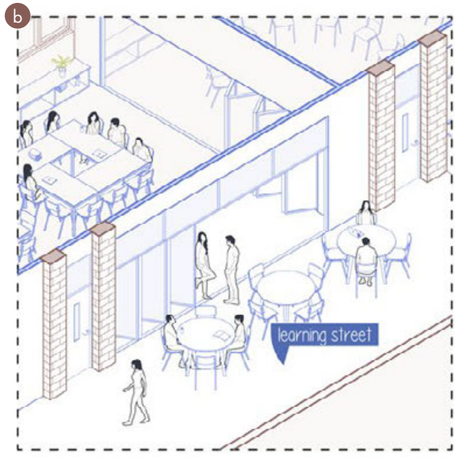
WHAT IS A LEARNING STUDIO?

The term *learning studio* is used instead of *classroom* to describe the spaces within the addition. Varying in size, flexibility, and connection to the atrium, these studios are designed to support student-led learning. This does not mean the absence of a teacher; rather, it allows groups of students to find spaces to work independently on projects, while teachers circulate to facilitate and support as needed. The term “studio” reflects the purpose of these spaces: to encourage students to explore and develop their individual ways of learning. Each learning studio is unique in form and spatial connection.

C LEARNING STREET - existing building wing

Fig. 1.39 Elevation of proposed learning street





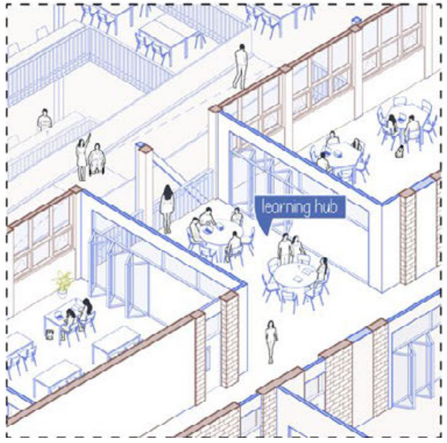


Fig. 1.40 Proposed fragments of the learning street

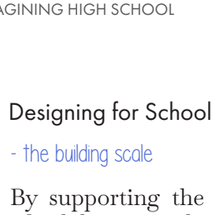
WHAT IS A LEARNING STREET?

Corridors are typically spaces of circulation, but when designed with niches, transparent walls, seating, connections to classrooms, and appropriate equipment, they can become learning streets. Similar to learning studios, these streets can be student-led, providing spaces where students can engage in ways that suit their individual needs and preferences.

7.2 Designing for School Identity

- the building scale

By supporting the developmental needs of adolescents, the school building can function as a safe space where students take risks, explore, and make the most of new opportunities. When treated as a student-centred environment, the school becomes a place rich with learning moments, whether through social interactions, independent work, observation of the exterior environment, or engagement with the surrounding community. These informal experiences help students build a sense of belonging and develop their identities within the school community. Transparency throughout the building not only enhances safety but also sparks curiosity, encouraging students to explore different classes, workshops, and clubs. This study focuses on three key interventions: the addition of a learning commons, the retrofit of the gymnasium, and the adaptation of the building to include a community centre.



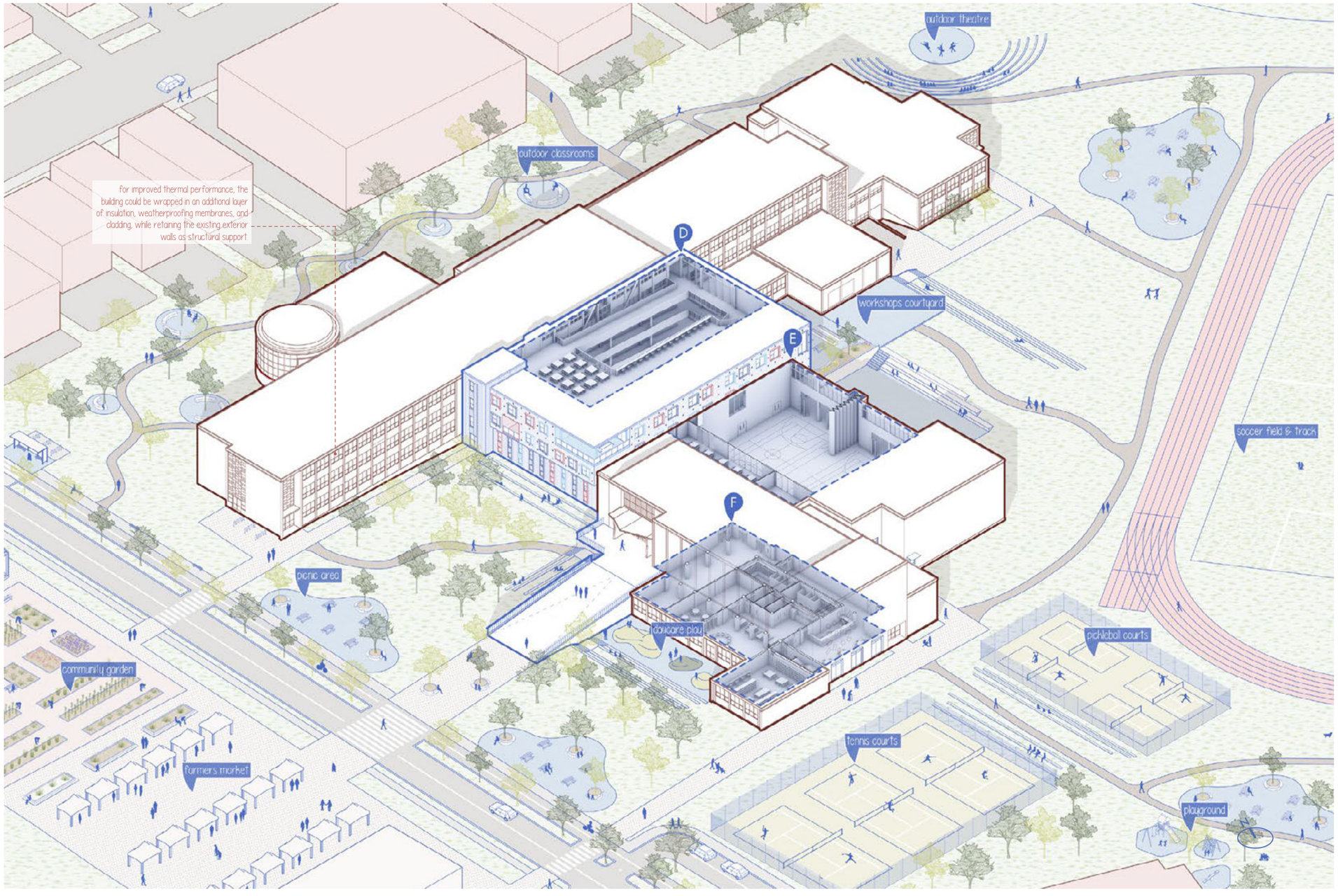
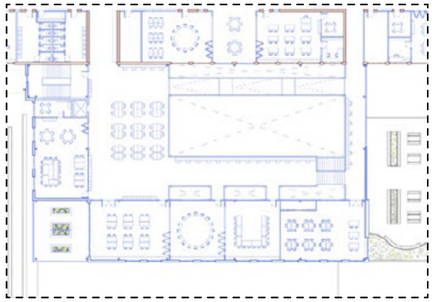


Fig. 1.41 Proposed site axonometric highlighting areas of focus for the building scale redesign

D MULTI-PURPOSE ATRIUM

- addition wing



WHAT IS A LEARNING COMMONS?

A learning commons is a flexible and collaborative space, typically positioned at the center of a school to link multiple program areas. Since these spaces are usually open and multi-storey, integrating one within the existing structure would have presented significant challenges. Consequently, the learning commons is introduced as a new addition to the building. Functioning simultaneously as an atrium, it acts as the primary circulatory hub. At its center, a gently sloped ramp provides an accessible route while also creating a dynamic spatial experience as students move between the existing and new structures. Designed as an open and adaptable setting, the learning commons accommodates a broad range of activities, including small study groups, lectures, school-wide gatherings, lunch periods, and informal social interactions. Integrated technology, such as accessible laptops, charging stations, and monitors, supports both individual and collaborative learning, reinforcing the space's role as a central academic resource.

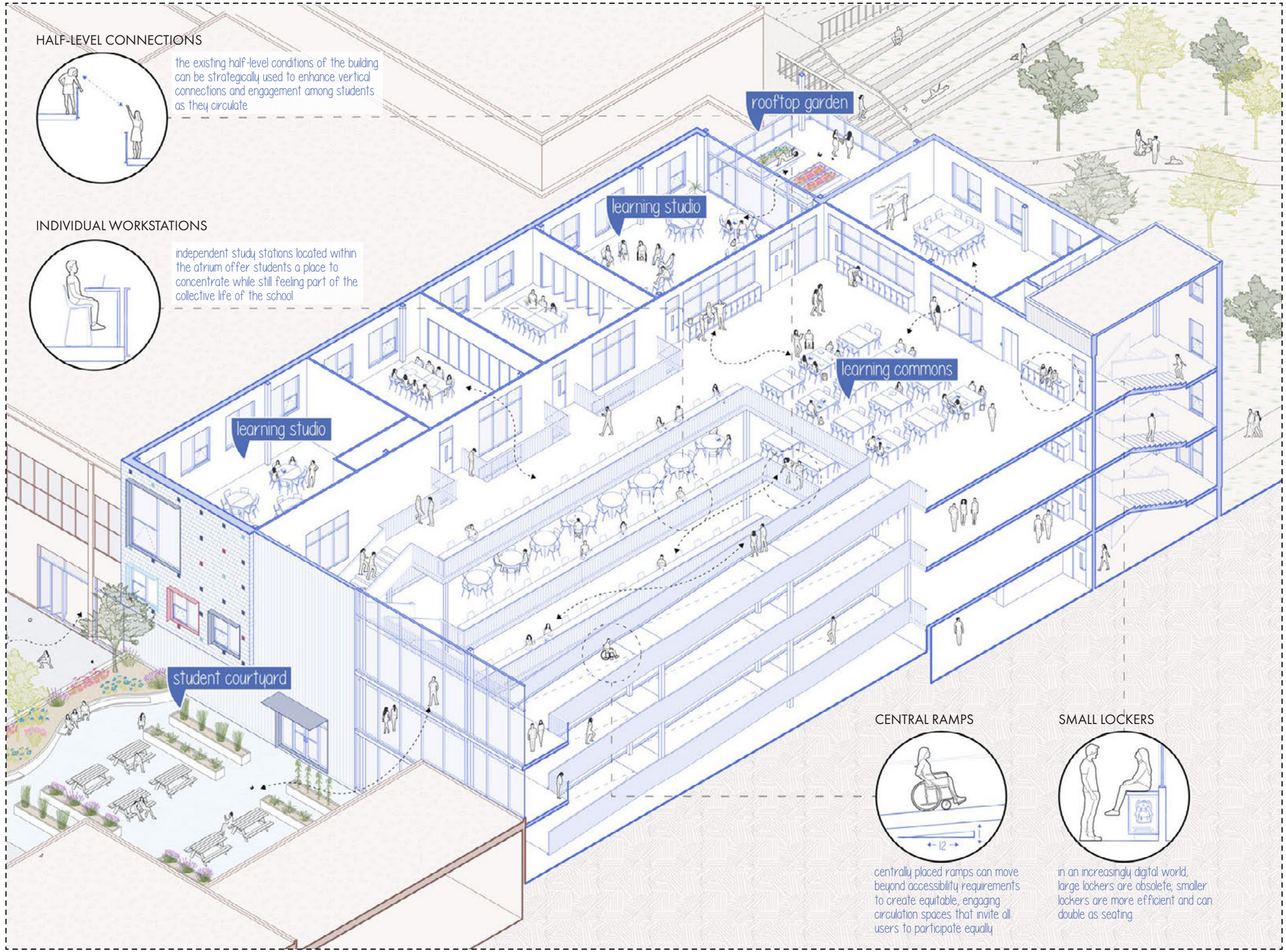
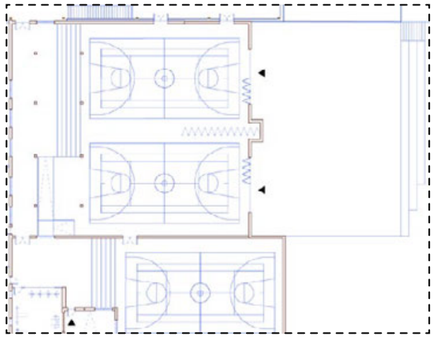


Fig. 1.42 Proposed learning commons design

E COMPETITION GYMNASIUM

- existing building wing



WHAT IS A GYMNASIUM?

The gymnasium serves as a vital space of school spirit, identity, and community. It is where students, teachers, and staff come together to celebrate achievements, share challenges, and participate in collective events, from athletic competitions to assemblies and seasonal celebrations. Establishing clear visual connections between the gymnasium, main entrances, and atrium spaces enhances its sense of energy and inclusion within the school, while also introducing natural light into a space that is often large and enclosed. Parallel connections to adjacent outdoor areas further enrich physical education by enabling activities to extend beyond the building. When designed with accessibility in mind, the gymnasium can serve as a valuable community asset, providing flexible space for local events, recreational programs, and sports clubs.

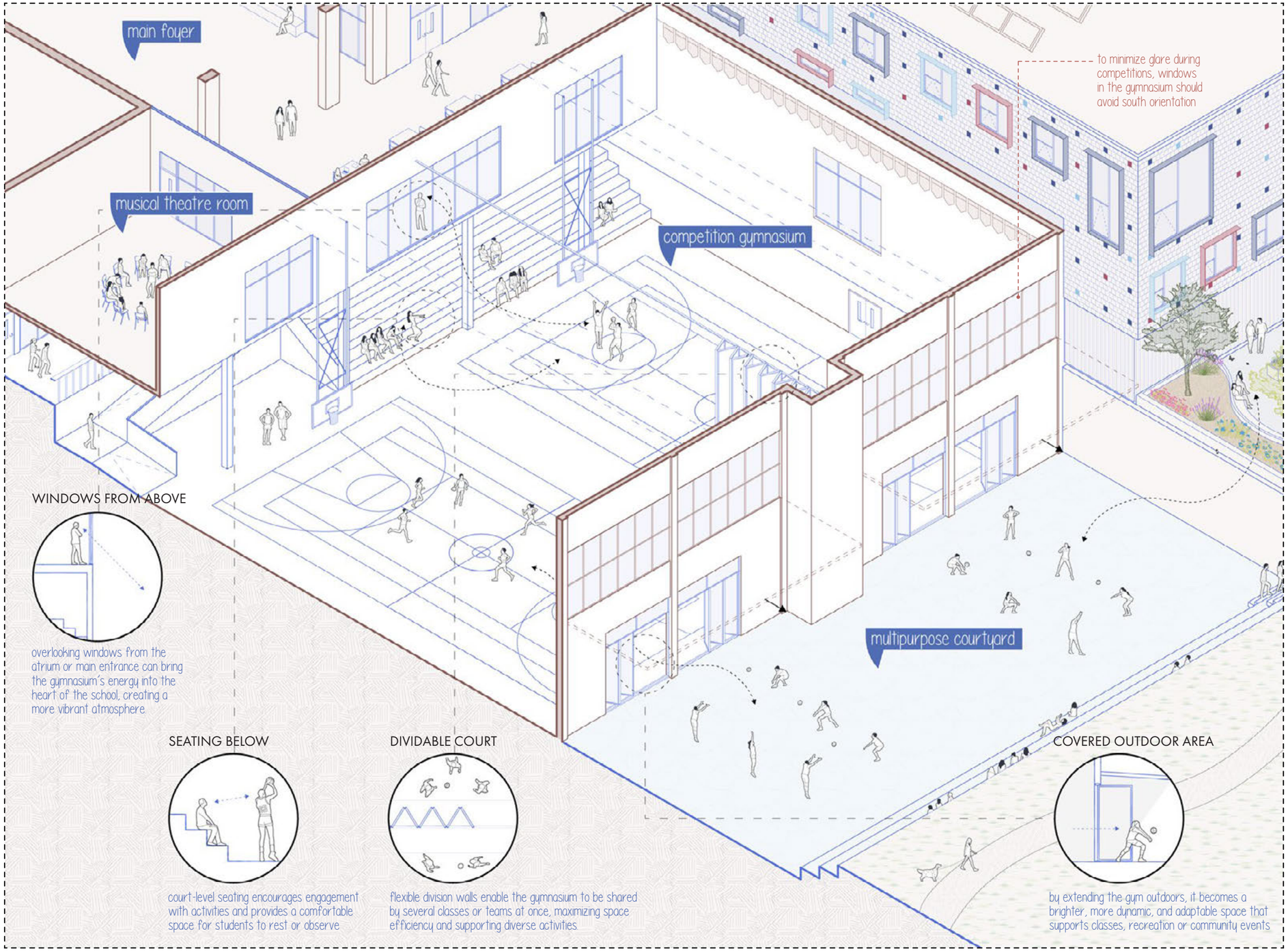
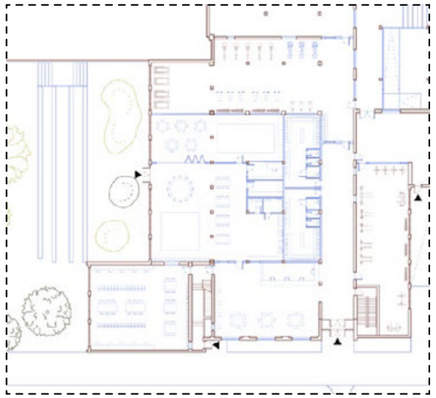


Fig. 1.43 Proposed gymnasium redesign

F COMMUNITY LEARNING CENTRE

- existing building wing



WHAT IS A COMMUNITY CENTRE?

A community centre can encompass any range of spaces that serve the surrounding neighbourhood, including daycares, libraries, and fitness facilities. When integrated within a school building, the foremost consideration must be the prioritization of student spaces, schedules, and safety. Providing a dedicated entrance for community users, monitored by a reception area, ensures that community access occurs securely and respectfully. Transparency, through strategically placed windows, can foster visual connection and engagement between students and community members, while controlled access points, such as keyed or fobbed doors, maintain necessary boundaries. Although these centres do not need to be extensive in size, they can effectively expand into existing school facilities after hours, such as the auditorium, gymnasium, or learning commons, allowing the school to function as an active community hub well beyond regular school hours.

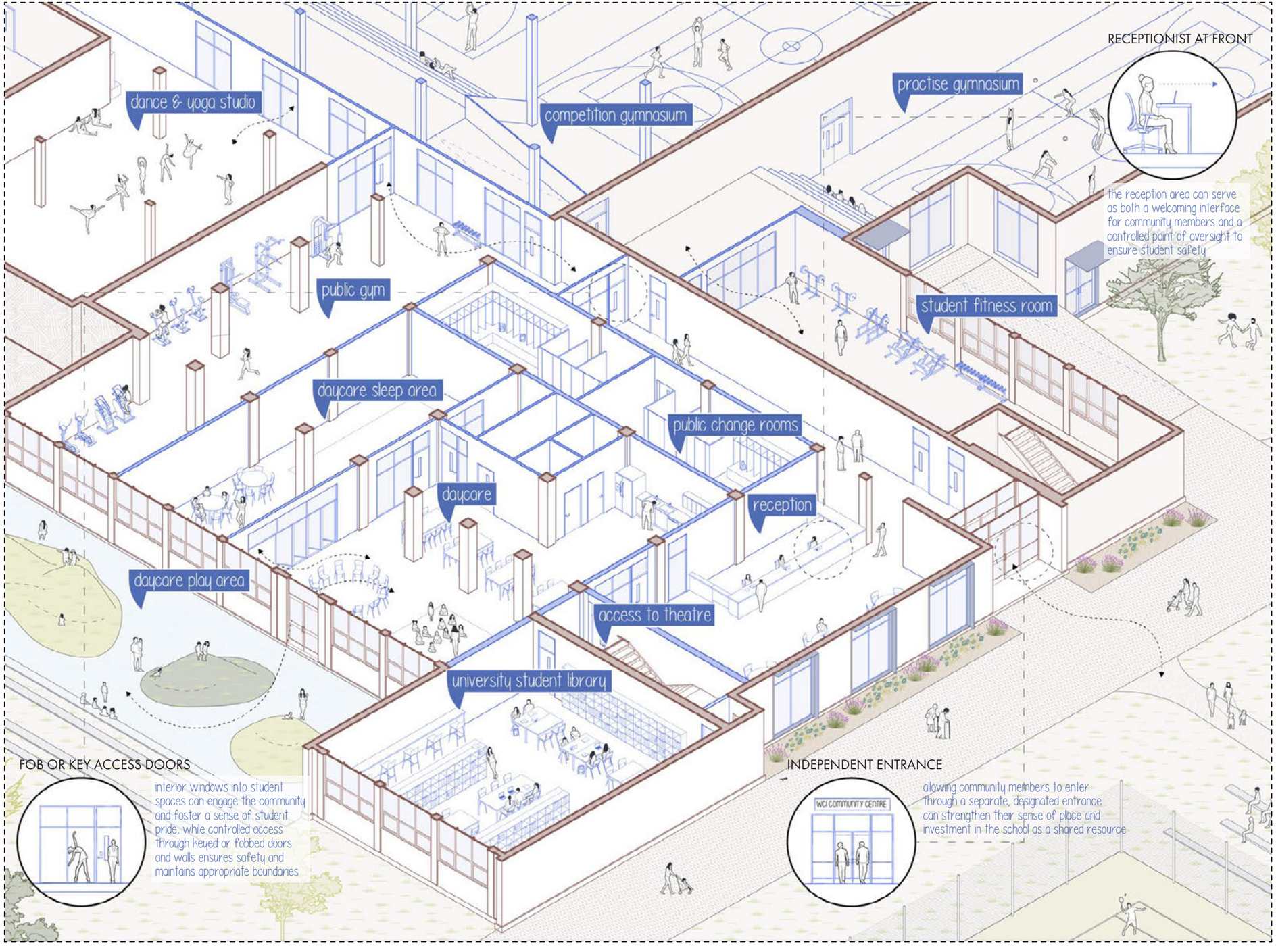


Fig. 1.44 Proposed community centre design

7.3 Designing for Community Integration

- the urban scale

As adolescents prepare for adulthood, exposure to community involvement becomes a vital and formative experience. Although such experiences can be intimidating and involve a degree of risk, it is within the real world that students discover their passions, develop practical skills, and begin to shape their sense of identity. Therefore, it is essential to view the community as an extension of the school—an environment that supports learning beyond the classroom.

When students are given responsibility through work experience, mentorship, volunteering, and other forms of engagement, they gain a sense of purpose and connection to something greater than themselves. To support this, partnerships with local programs that are walkable or easily accessible by public transit are crucial. Likewise, teachers and student groups can take an active role by organizing opportunities to learn beyond school grounds.

The school site itself can serve as a bridge between students and the broader community. Through welcoming landscaping, outdoor programming, and thoughtful maintenance, the school can become a place that people are drawn to and take pride in as part of their neighbourhood. When designed as a vibrant, 24/7 space within the urban landscape, the school can support both learning and community life. In these shared environments, students form meaningful connections with others, while the community, in turn, becomes a valuable resource for educational experiences.

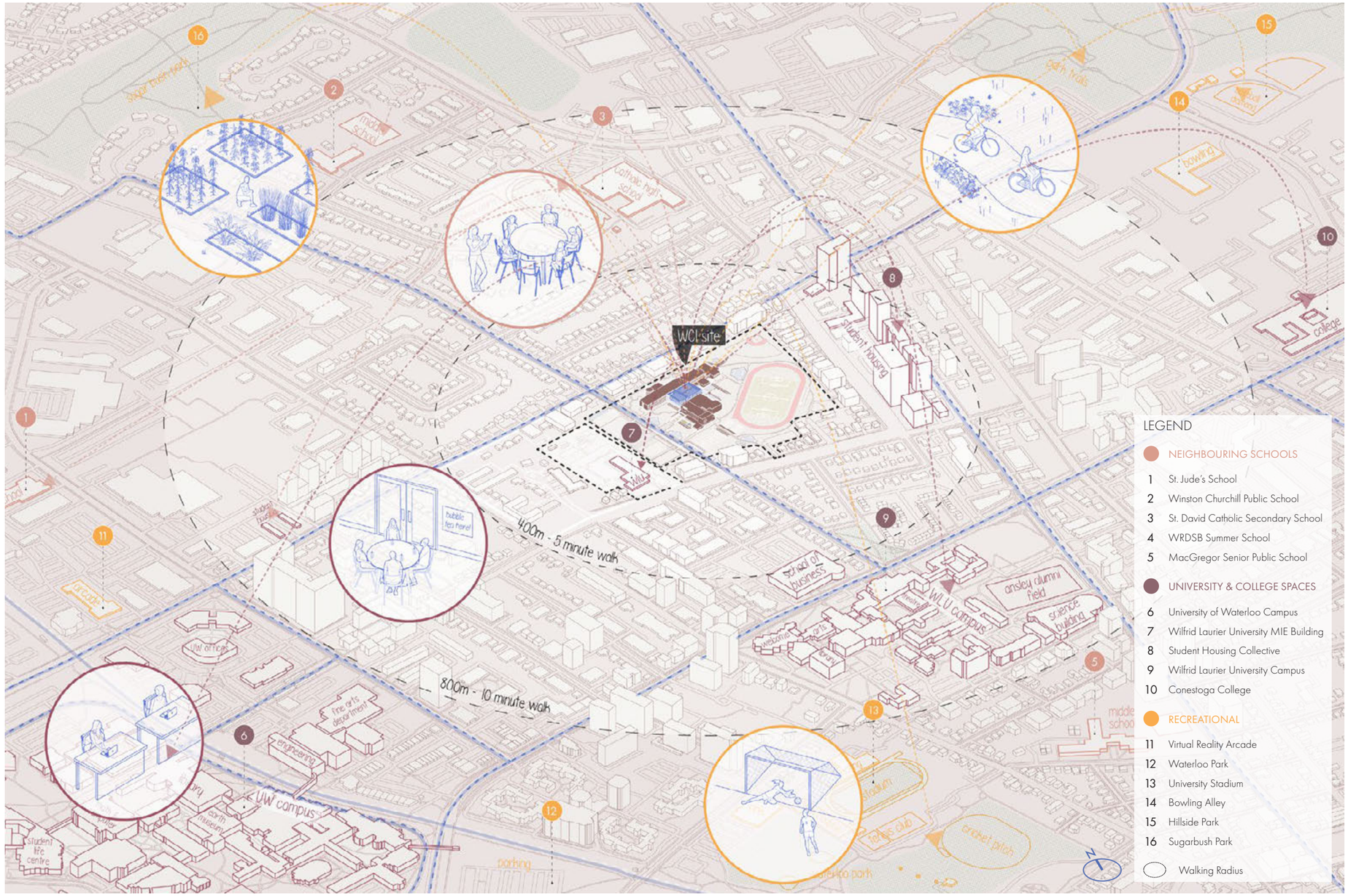
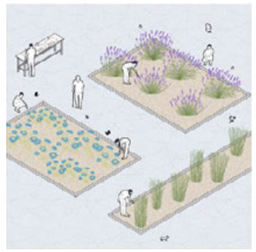


Fig. 1.45 Potential community connections for WCI

1 Outdoor Seating & Picnic Area

Trees can provide natural shading for these areas, reducing solar heat gain and enhancing outdoor comfort

2 Community Garden



Gardening can connect community members through shared outdoor activities, with produce potentially sold at the proposed farmers' market

3 Outdoor Classroom

Conducting classes outdoors can provide a healthy and refreshing break in students' day while extending learning beyond the classroom

4 Rooftop Garden

Rooftop gardens not only create visual access to the broader community but also serve as spaces where students can relax and reflect between classes

5 Park & Playground

Playgrounds provide an opportunity to engage younger children on site and can serve as valuable resources for community programs, including daycares

6 Dog Park

In addition to offering a space for pet exercise, dog parks can function as informal community gathering areas, encouraging social interaction and connection among residents, especially young adults

7 Outdoor Theatre

Outdoor theatres provide students with opportunities to publicly perform and showcase their learning, while also serving as versatile spaces for community events and gatherings

8 Informal Seating

Strategically placed outdoor seating throughout the school site can enhance the sense of openness and accessibility, making the environment feel more public and welcoming

Fig. 1.46 Vignettes of proposed outdoor spaces

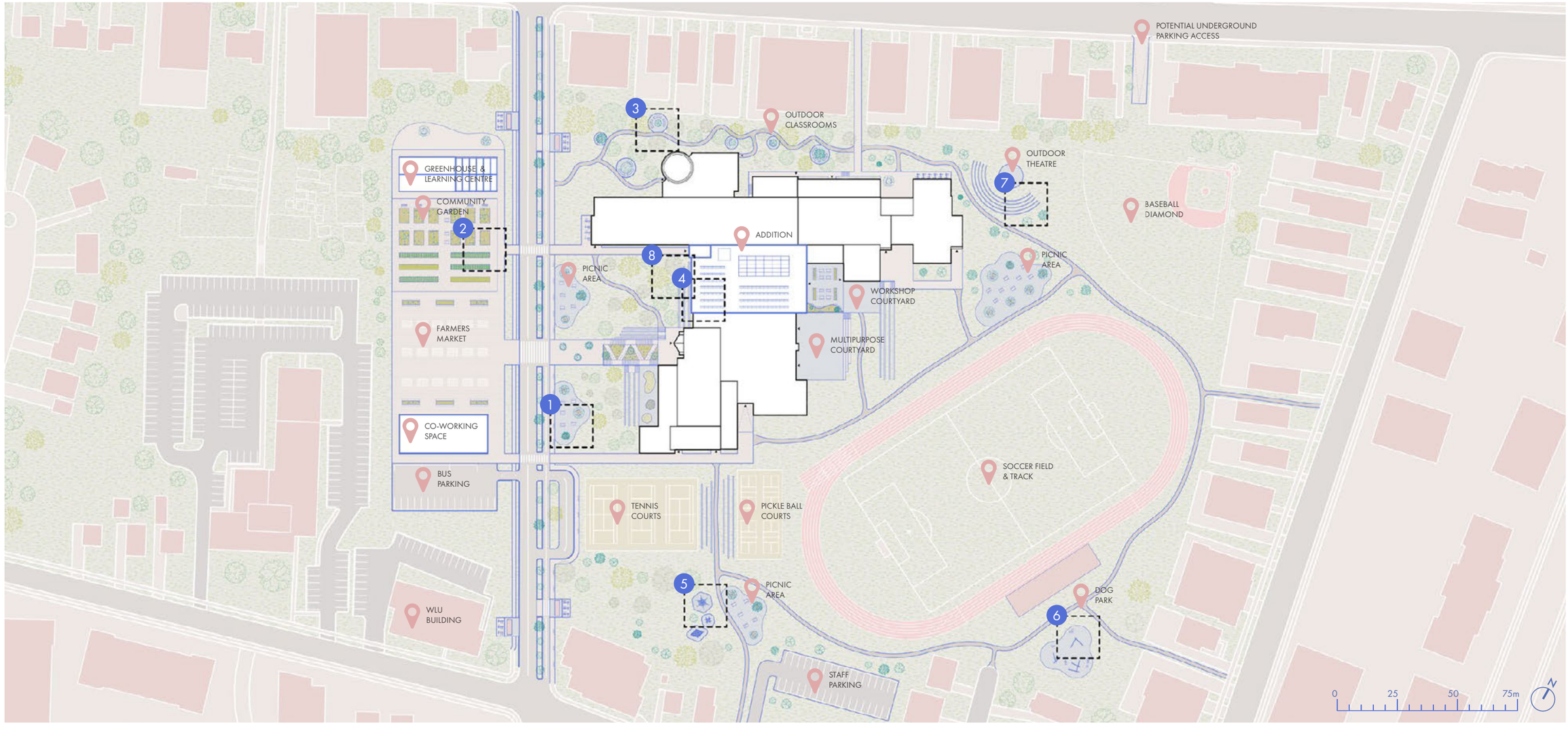


Fig. 1.47 Proposed site plan