Quick Reference Tabs:

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LEED® TOUR THE LEARNING EXCHANGE

Welcome to The Learning Exchange!

This building officially opened in January 2011 as Mohawk's first LEED® certified building, achieving LEED® Gold standard.

Leadership in Energy and Environmental Design (LEED®) is a third-party certification program that sets the international standard for the design, construction and operation of high performance sustainable buildings. A building achieves LEED® certification by accumulating points in these major credit categories:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation & Regional Priority

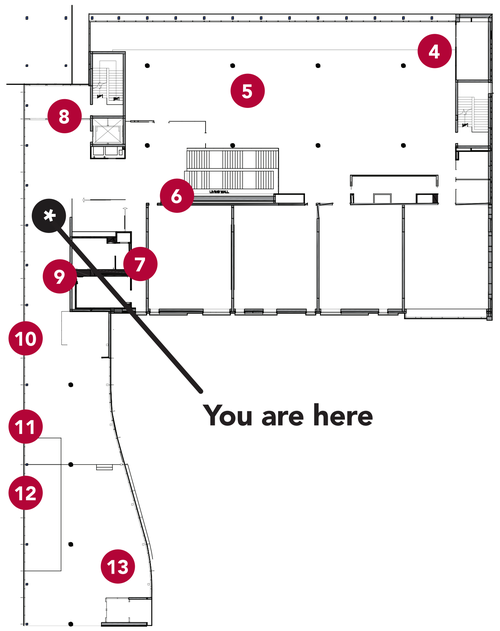
Depending on the number of points a building earns under the LEED® scoring system, it can achieve either a Silver, Gold or Platinum certification.

Since all LEED® buildings are unique, The Learning Exchange is equipped with a self-guided, interactive tour that highlights many of the sustainable features that have contributed to a beautiful, functional LEED® Gold facility.

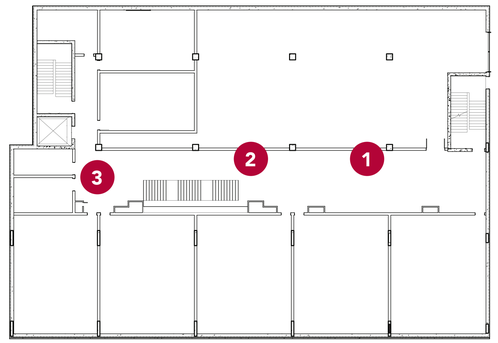
As you explore the building, you will notice a series of plaques mounted throughout. These plaques each contain information about different building features, as well as a set of Quick Reference tabs so you can see at a glance how the features contribute to the LEED® score.

Learn more at
mohawkcollege.ca/leedtour

Level 1



Concourse



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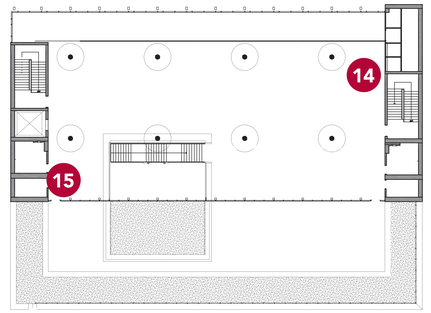

The Features:

1. Living Lab Facility
2. In-floor Radiant Heating
3. Building Automation System
4. Use of Lighting
5. Digital Communications
6. Living Wall
7. Efficient Plumbing
8. Active & Alternative Transportation
9. Minimal Finishes
10. Automated Window Shades
11. Sustainable Wood
12. Fennell Lawn
13. Digital Metering System
14. Construction Process
15. Rooftop Features

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« Students can interact directly with the core building systems in the specially designed Mechanical Room.

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Living Lab Facility

Nearly 75% of total space in The Learning Exchange is usable for academic programs, compared to the industry average for usable program space of 40 – 50%. In fact, this whole wing stands as a living lab for Engineering Technology students.

With exposed systems throughout the building, students can see how the building functions at a basic level.

The building's Mechanical Room has also been specially designed to accommodate student groups, allowing them to interface directly with the facility's core systems such as heating, ventilation and air conditioning (HVAC), water systems, and renewable energy monitoring.

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« Regulating the floor temperature through radiant heating and cooling is more efficient and cost effective than regulating the temperature of the air.

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In-floor Radiant Heating

Beneath the floors of The Learning Exchange, is a complex network of tubes called hydronic piping, cast into the concrete slab. Water, either hot or cold, is forced through these tubes in a closed loop between the floor and the boiler. This hydronic system can provide either heating or cooling, as opposed to an electric system which can only be used for heating.

By heating or cooling the surface of the floor, the system increases occupants' thermal comfort by regulating the ambient temperature of the building. This in turn helps to regulate the body temperature of occupants, preventing body heat loss in winter and encouraging it in the summer. Radiant heating and cooling on the floor surface reduces operational costs by minimizing the need for heating the air, which is much less efficient and cost-effective than regulating the floor temperature.

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« The Building Automation System reduces overall energy consumption by monitoring and controlling mechanical, electrical and lighting systems.

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Building Automation System

The Learning Exchange is equipped with a computerized network of electronic devices called the Building Automation System (BAS). These devices are located throughout the building to monitor and control the mechanical, electrical and lighting systems.

The Building Automation System is designed to keep the building's climate within an ideal range providing comfort as well as efficient use of energy. The BAS can also be programmed to provide lighting based on an established occupancy schedule.

The BAS monitors system performance as well as device failures, and communicates any issues directly to maintenance staff. Through constant monitoring of The Learning Exchange's systems, the BAS helps to reduce overall energy and maintenance costs of the building.

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« The low-wattage light fixtures throughout the building are carefully positioned to compliment natural light, and to use artificial light as efficiently as possible.

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Use of Lighting

The Learning Exchange contains a variety of lighting systems that help to minimize the consumption of energy for artificial light. Some lights are connected to daylight sensors that are located near windows. The amount of sunlight detected by the sensors determines whether these lights are switched on or off.

Most rooms are equipped with overhead lighting activated by motion sensor. These rooms also contain override switches so that lights can be controlled manually after hours, when the Building Automation System turns them off based on peak occupancy times.

All of the lighting used throughout the building has low wattages and many are LED fixtures. Light fixtures throughout the building are carefully positioned to use light as efficiently as possible, according to LEED® standards.

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« The Cummings Library & Collaboratory boasts over 65% of available resources in digital format.

5

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Digital Communications

This building, like the rest of the College, is equipped with LCD monitors that display campus news and announcements, and highlight some of the great work done by our media students. Displaying this information digitally reduces the amount of temporary paper signage produced (and thrown away) at Mohawk.

The Cummings Library & Collaboratory boasts over 65% of available resources in digital format, which also reduces paper consumption and allows for a more efficient use of space. The collaborative technologies incorporated into the smart classrooms, e-library and Collaboratory make paperless information sharing easy.

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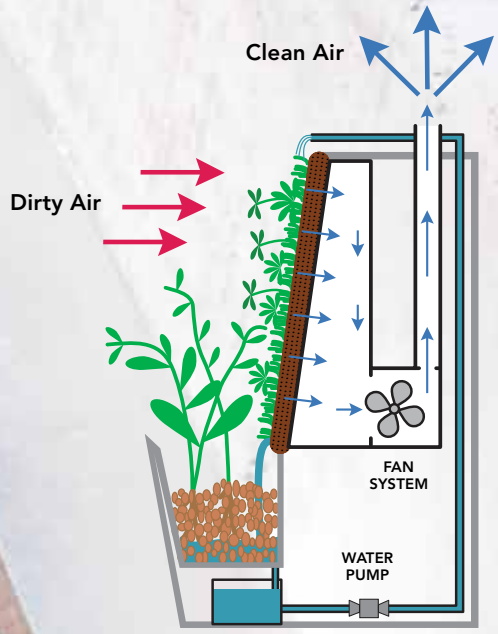
« More than 2,000 plants help improve indoor air quality through the process of biofiltration.



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Living Wall

The eye-catching, two storey living wall is made up of more than 2,000 plants. These plants improve the indoor air quality through the process of bio-filtration. This means that the plants absorb toxins like carbon monoxide and formaldehyde from the air and produce clean oxygen for us to breathe.

The many plants also help to cool the air, which reduces the cooling costs of the building. In fact, a large group of plants can reduce indoor air temperatures by several degrees.

The living wall also increases occupant comfort by improving acoustics and providing more natural surroundings, which is believed to reduce stress.

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« Faucets are activated by motion sensor, which ensures that water is not left running needlessly.

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Efficient Plumbing

Plumbing fixtures installed in The Learning Exchange include low-flow toilets, urinals, and faucets that have helped to significantly reduce water consumption.

The original College toilets operated at 13L of water per flush, but were replaced through retrofitting with the more efficient 6L per flush. To comply with LEED® standards, the toilets in this building require only 4.8L per flush. The urinals and faucets use even less water at 1.9L per flush and 1.9L per minute, respectively. The faucets are also activated by motion sensor, which ensures that water is not left running needlessly.

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Active & Alternative Transportation

Creating a synergy with the existing neighbourhood is an important part of a LEED® building. One way to accomplish this is through supporting active and alternative modes of transportation.

The Learning Exchange includes pedestrian-friendly landscaping that provides safe, convenient access to municipal public transportation.

The front entrance is equipped with a bike pad for cyclists, a drop-off area for carpoolers, and a transfer zone for inter-campus shuttles.

Supporting active and alternative transportation helps improve physical activity levels, maintains air and water quality, reduces local traffic congestion, and increases accessibility to the campus.

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Minimal Finishes

The Learning Exchange was completed with minimal finishes, allowing the structure of the building to shine through as the décor. The facility includes built-in features such as polished concrete floors, sleek pairings of steel and glass, and visually interesting support columns.

A high amount of finishes can negatively impact a building's LEED® score. Many finishes and furnishings can compromise compliance with low VOC standards as a result of chemical protective coatings, certain plastics and other environmentally harmful materials. Excluding these items from design reduces future maintenance and renovation costs.

Each finishing item excluded from the building represents one less item that must be manufactured and subsequently transported. Put simply, this reduces the overall environmental impact of the project.

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Automated Window Shades

The second floor Collaboratory and the corridor adjacent to The Learning Exchange have window coverings that can be programmed to a predetermined schedule. The shades are linked to wall mounted controls, and can also be opened or closed manually to adjust for occupant comfort. These shades make maximum use of natural light to reduce the need for artificial lighting.

Natural light helps your body produce Vitamin D. Not only does this have a positive impact on your immediate mood, but Vitamin D is reported to regulate the level of calcium in bones, boost the immune system, and can also help control other health issues like high blood pressure, arthritis and diabetes.

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« Wood certified by the FSC is cultivated from sustainably managed forests that balance planting with harvesting.

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Sustainable Wood

In order to meet LEED® standards, a minimum of 50% of the wood used is required to be certified by the Forest Stewardship Council (FSC). The FSC provides wood and paper products from responsible sources that are environmentally conscious, economically viable, and socially beneficial to the communities from which they are extracted.

A certification from the FSC carries the recognition that the wood has been cultivated from a sustainably managed forest with a corresponding planting plan ensuring the balance between planting and harvesting is maintained. All FSC certified wood is harvested using environmentally sensitive methods that have minimal impact on surrounding wildlife.

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Fennell Lawn

The Fennell Lawn was created using an advanced generation of turf-type grass which produces rhizomes. A rhizome is an underground stem that stretches sideways through the soil to help spread the plant. Rhizomes send shoots up to the surface of the soil while extending new roots downward, forming a new plant.

This special kind of sod requires less watering and fewer cuts throughout the growing season, reducing maintenance costs, and provides an outdoor area for a variety of campus activities and recreation.

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« The Digital Metering System is tied into several meters throughout the building which track the use of electricity, natural gas and water.

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Digital Metering System

The facility's built-in Digital Metering System is tied into several meters throughout the building which track the use of electricity, natural gas, domestic water, chilled water, and heated water. The electrical tracking is broken down into Sub-Meters, which makes it possible to view the kilowatt consumption of individual electrical panels.

The Digital Metering System also catalogues the history of usage, which allows for tracking patterns and usage trends over time. The availability of these statistics is critical to maintaining the building's optimal energy performance year after year.

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Construction Process

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Local, Sustainable Materials

For this project, over 15% of the total materials are post-consumer, and more than 38% of total materials were regionally extracted. Sourcing local materials reduces emissions resulting from the transportation of materials, and helps stimulate the local economy.

Indoor Air Quality

Duct work is sealed to prevent dust and debris from entering the HVAC system and scrubbers are fixed to exhaust pipes of indoor construction vehicles, removing harmful emissions from the air. Measures like these ensure indoor air quality long after the construction process.

Low VOC Compliance

Volatile organic compounds (VOCs) are pollutants that can negatively impact air quality. LEED standards require that materials like paints and adhesives comply with regulations that ensure health and safety of occupants, and mitigate undesirable respiratory and allergic effects.

Waste Management

Separating recyclable materials from the waste stream prevents them from unnecessarily ending up in a landfill. During construction of The Learning Exchange, 645.8 tonnes (over 82%!) was diverted from landfill.

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« The rooftop features help reduce heat transfer from the sun and add insulation, resulting in lower annual heating and cooling costs.

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Rooftop Features

The ambient rooftop patio features a partial green roof that contains three native plant species requiring little water or attention. The rest of the roof utilizes a reflective roofing system that reflects the infrared and ultraviolet rays of the sun, reducing heat transfer to the surface.

These features also add insulation to the building, reducing the annual heating and cooling costs.

By abating the impact of the sun and weather, the green and reflective roofing extends the life span of the building.

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