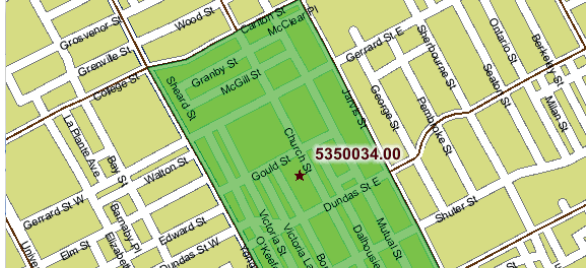


# PHASE ONE RESEARCH

## A NEW WORKPLACE DESIGN PARADIGM 1.1

### INTRODUCTION



Technology has grown rapidly among institutional facilities throughout the last decade, but do they cater to everyone and are they user friendly? Here, technology based learning and its effectiveness are explored through the statistics of Toronto's large urban centres, case studies and surveys, leading us towards a new paradigm: promoting the language of technology leads to more effectiveness in learning.

### FIELD ANALYSIS: UNIVERSITY OF TORONTO, LECTURE HALL

University of Toronto has been educating their students through lecture sessions as well as tutorials since it started operating in 1827. Our analysis consists of examining the typical lecture hall style and whether it best suits the learning environment for the students. Our analysis of the space layout showed that the lecture halls are not a collaborative space; seats were arranged in a way which did not engage the students during class, especially when there were large volumes of students. Technology can be used to help personalize the learning experience catering to each students needs. Traditional layout falls weak in student engagement thus better collaborative arrangements are necessary to help gain involvement and efficient learning behaviors.

### CASE STUDY OF AVENUE AND AFSE

Technology has a strong influence in determining the advancement of the university as well as their potential in keeping up with the fast pace of software and machinery used in the workplace. There are two schools that are attempting to restructure their educational programs through the use of technology. Avenues New York is placed at an advantage due to their higher tuition price at \$40,000 per year. Higher tuition costs allow the school to purchase the latest software and technology for students to access. Not only does it benefit the students but also the reputation of the school, thus developing a higher standard of education towards the public. On the other hand, the Academy for Software Engineering is a unique school that does not consider potential students' past record of attendance and grades when proceeding with acceptances for the new school term. The reasoning is students are less likely to perform well and attend classes for academic subjects unrelated to their interests but will be motivated to do well in courses that they enjoy.



## RESEARCH TRANSLATION 1.2

### LITERATURE STUDY OF EXISTING TECHNOLOGY

www.international.gc.ca, www.statcan.gc.ca, www.oc.gc.ca/english/resources/evaluation/m2010/evaluation2359, www.joelonsoftware.com/items/2012/01/13.html, www.fastcompany.com/2000016/two-new-experimental-schools-attempt-redesign-education



Canon and gaming companies have developed a lightweight headpiece known as the Virtual Reality System (VR) that allows users to connect with both the real and virtual world. It is operated using motion sensors or a controller that can detect the hand movements of the operator. This technology is valuable as it allows students to learn and interact with computer generated simulation of real life situations or models. This would cut costs on physical materials that would normally be used in labs or workshops.



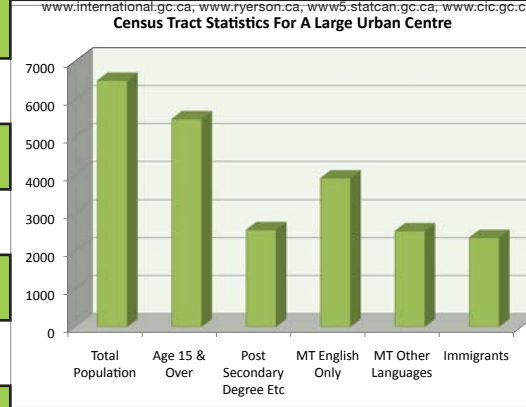
Another valuable piece of technology that could be used in addition to the VR system is the Light Touch interactive projector. This system in a small or large scale means conservation of physical space because it can essentially project anything on any given surface. This technology was incorporated into the Sportiis Eyewear. Rather than having a large projector casting the holograms, eyepieces allow the user to see digital projections through the lenses.



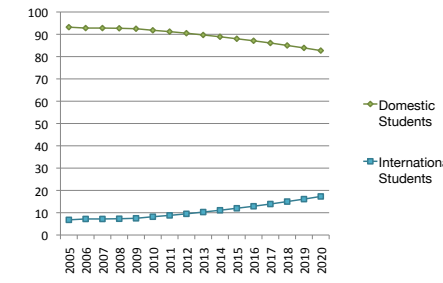
In the digital learning environment, Microsoft has developed a "holodesk". They use it in conjunction with their already developed "Kinect" to track the user's motion and join that with holographic projections, which create an instant response system.

## DEMOGRAPHIC RESEARCH 1.3

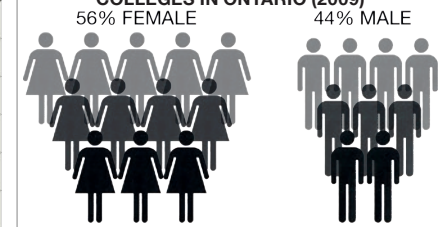
### CENSUS TRACK RESEARCH CHARTS



DOMESTICS VS INTERNATIONAL STUDENT TRENDS



### GENDER OF STUDENTS IN UNIVERSITIES AND COLLEGES IN ONTARIO (2009)



47% FULL TIME STUDENTS  
53% PART TIME STUDENTS  
FULL TIME & PART TIME STUDENTS IN UNIVERSITIES AND COLLEGES IN ONTARIO

These statistical findings provide an understanding towards the characteristic of technology use among different demographics in order to develop the best environment to fit the needs to the people. By understanding the student's individualities, consideration can be made towards the proper design implementation towards finding signage and enhancing students' learning experience.

SARAH SAID:  
"Having a library with lots of workspace and group working areas are most important factors towards my working habits."

The most wanted innovative feature in our survey (64%):  
Interacting with holograms & projections.

Andrea & Dane said: "Having outdoor learning/ studying environments would be a new learning experience and a change from lecture halls."

Mau said: "I would rather have more hands on and collaborative spaces rather than lecture based curriculum."

## BOMA RESEARCH 1.4

### SINGLE LEVEL GROSS AREA

Footprint of Gross Area & Net Area

Single Level Gross Area: 10000 Sq Ft

Barrier Free Circulation (35%): 3500 Sq Ft

Net Area: 6500 Sq Ft

### SECOND LEVEL GROSS AREA

Second Level Gross Area: 8340 Sq Ft

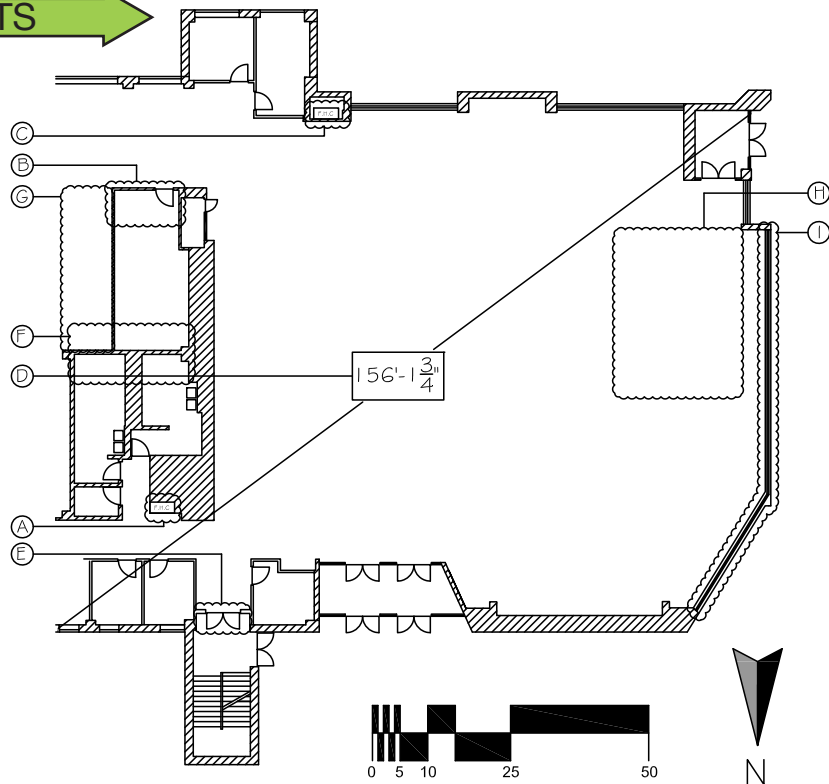
Barrier Free Circulation (35%): 2919 Sq Ft

Net Area: 5421 Sq Ft

## EXISTING BUILDING AND CODE CONSTRAINTS + PROPOSED 1.5

### EXISTING CONSTRAINTS

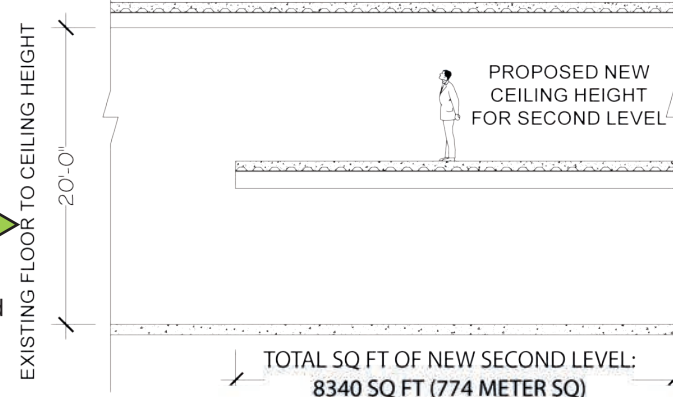
EXISTING CONDITIONS	
ZZZ	EXISTING STRUCTURAL PARTITIONS
---	EXISTING EXTERIOR WINDOWS
---	EXISTING INTERIOR PARTITIONS
---	EXISTING GLAZED PARTITIONS
---	EXISTING SINGLE/DOUBLE DOORS
CONSTRAINTS WITH THE OBC	
A	STAIRCASE PARTITIONING IS EQUIPPED WITH A HOSE RACK NOT MORE THAN 30M (98.4 FT). EVERY PORTION OF THE BUILDING IS REQUIRED TO BE REACHED BY THE HOSE STREAM AND 3M (9.84 FT) OF ITS NOZZLE. DUE TO FUTURE PARTITION A SECOND F.H.C. WILL BE REQUIRED. (OBC 3.2.9.4(2)(5A))
B	PROPOSAL FOR ELEVATORS FOR OUR BARBER-FREE INSTITUTION. BUILDINGS WILL COMPLY TO OBC (3.2.9.5, 4.3.2.4.4 (1)(3)).
C	EXISTING DIA HOSE CONNECTIONS FOR F.H.C. SHALL BE INSTALLED IN EACH STOREY IN THE BUILDING. SINCE BUILDING AREA IS MORE THAN 4000 SQUARE METRES (40000 SQ FT) (OBC 3.2.9.3.2.2(2))
D	CURRENT PROPOSED F.H.C. WILL BE INSTALLED ON THE FIRST AND SECOND IN EACH STOREY IN THE BUILDING.
E	ONE HALF THE MINIMUM DIAGONAL DIMENSION OF THE FLOOR AREA IS 78" (203.37MM). THE MINIMUM DISTANCE BETWEEN EXITS REFER TO OBC (3.4.2.3.1)
F	THE CURRENT BUILDING DOES NOT REQUIRE ANY ADDITIONAL EXITS DUE TO THE TRAVEL DISTANCE NOT EXCEEDING 30'-3140M) COMPLYING TO THE OBC (3.4.2.3.5, 3B)



## PROPOSED STRUCTURAL DEVELOPMENT PROPOSED SECOND LEVEL 1.6

PROPOSED STRUCTURAL CHANGES	
F	DUE TO OUR PREDICTION FOR OVER A 100 OCCUPANCIES IN OUR INSTITUTION WE REQUIRE A MINIMUM OF SIX WATER CLOSETS FOR EACH SEX.
G	PROPOSAL FOR BUILDING OUT THE CORE 24 SQUARE METRES (263 SQ FT).
H	PROPOSAL FOR STAIRS LEADING TO SECOND LEVEL SUBJECT TO BE USED AS AN EXTERIOR PASSAGEWAY, TOWARDS AN EXIT.
I	PROPOSAL FOR CURTAIN WALL.

### ELEVATION OF PROPOSED SECOND FLOOR.



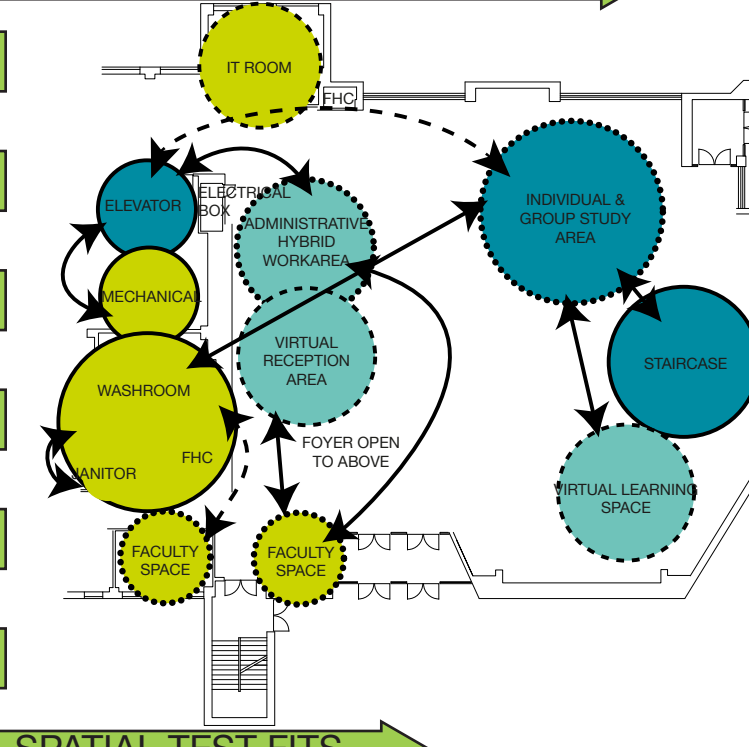
### EXISTING HISTORICAL CONDITIONS

Through our analysis of the existing conditions in the historical building, we have noted all the constraints and structural components which lead us to our proposed structural changes to comply with the OBC 2006. Our occupant calculations determining the institution will be spacious enough for 100 people, we intend to build out the core for expansion of existing walls for washrooms to cater to the water closets requirements. Both first and second floor layouts will have stacked plumbing for the water efficiency of the wet wall. Existing wall partition to the east will be replaced by a curtain wall to provide natural light to promote both wellness and productivity. All existing windows and exterior exits shall be kept and the reclamation of materials will be evident and refined through the existing wall structures composed of brick.

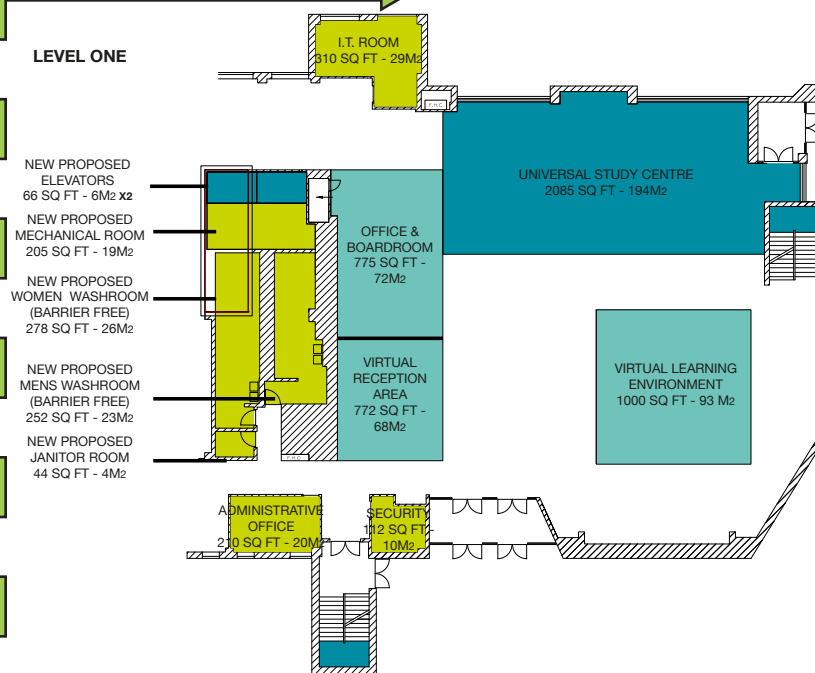
### VALUE-ADDED FEATURES










Our proposal for a partial secondary level is vital towards our design concept to provide comfortable circulation, flexibility, mobility and better learning spaces. The partial second level will be 5598 SQ FT (520.02 m2) using a total of 1956 SQ FT (18m2) for barrier free circulation which will provide us with a total net area of 3633 Square Feet (338m2).

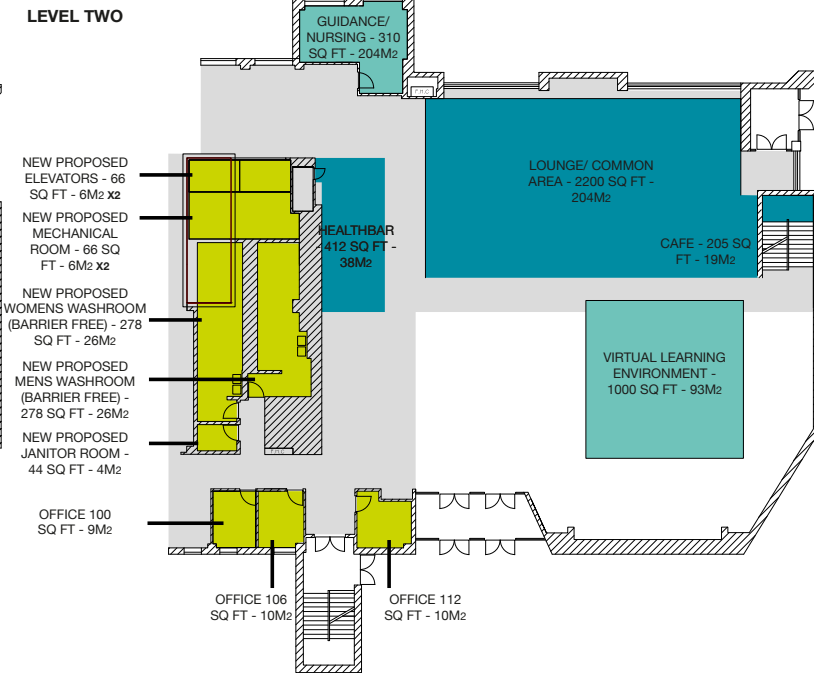
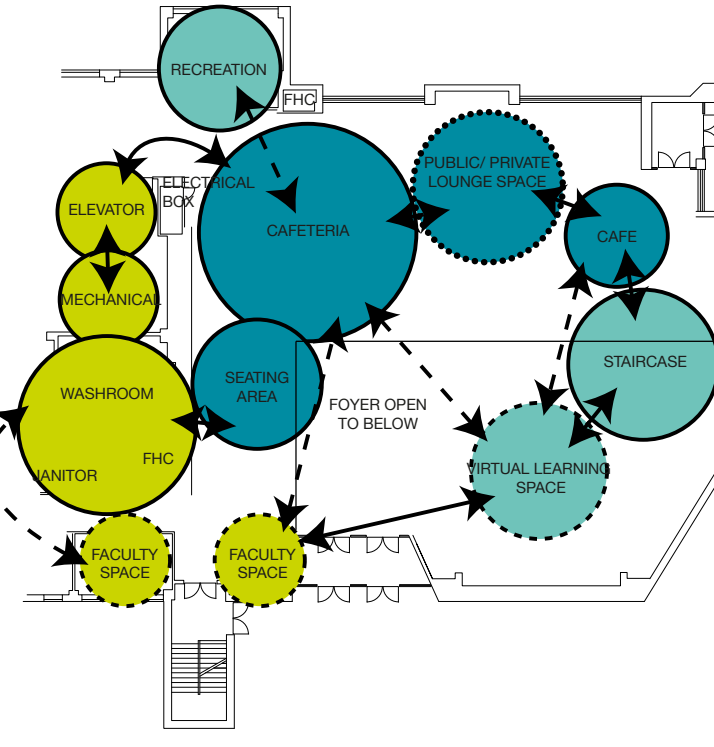
### PROXIMITIES AND ADJACENCIES



### SPATIAL TEST FITS



SPATIAL LEGEND	 PUBLIC SPACE	 PRIVATE SPACE	 SEMI-PRIVATE		
BEHAVIOR LEGEND	 PHYSICAL	 DIGITAL	 HYBRID	 DESIRED	  SECONDARY



## PROGRAM CONCEPT 1.8

### BEHAVIOUR CONCEPT

In today's growing society, the immediate access of information has become the norm and thus affecting human behaviour. Technology has further enhanced methods for humans to travel faster, communicate around the world, access endless information and etc. Although technology has provided human kind with endless possibilities, it also has several flaws including the decline in social collaboration between communities of people. Anti-socialism caused by popular modern day devices has impeded productive interaction necessary to enrich educational studies. In order to prevent this outcome, technologically enhanced spaces created here will cater to both small and large groups fostering communication between individuals.

### SPATIAL CONCEPT

Spatial manipulation will allow for education flexibility and comprehensible circulation which provide students open/closed, hybrid and mobile learning atmospheres. The spatial environment will provide an emotional attribute in its public and dedicated study environment, an algorithm of balancing the space will create a rhythm which easily distinguishes the physical spaces for the students, staff and professors. The unity within the space will not only provide a better learning environment, but also a multi-purpose space with flexible and mobile experience to better integrate an interactive community as well. The balance of a connecting community and self-oriented environment will overall enhance the learning experience for any student. Features such as energy efficient Energy Star LED lighting and acoustical panels will improve student atmosphere and productivity. Furthermore, the institute will require control of volatile organic compounds, room-temperature conditions, heat/cool gain and air circulation which strongly impacts the student's learning experience. Thus, we harmonized all FF&E attributes impacting students' productivity to enhance learning as well as develop a sustainable culture and improvement in their behaviour.

### TECHNOLOGY CONCEPT

Overall, the vast expansion in technology has been the social norm to enrich the learning experience for all students in today's society. Technology has answered to many problems however technology alone does not determine the positive or negative factors in an institution. It is not how advanced technology provides for the students, but how technology is being incorporated into the space in order to provide an optimal experience in connecting a virtual and physical learning environment.



# PHASE 2 & 3 PROGRAMMING AND DESIGN

## CONCEPT STATEMENT

Imagine a facility where technology enhances the quality of education and not take away from it; an institution that incorporates state of the art technology to bring students and its' facility together regardless of their area of study. This concept for the institution will not only utilize technology to enhance users' learning experience, but also encourage sustainable awareness, provide an eco-friendly learning environment and stimulate social interaction to offer students virtual and physical learning environments, SEED; the Sustainable Environmental Education Development program encompasses both the present and the future. SEED incorporates the latest technological features into the institution including, Virtual Mapping: Interactive information access portal for global news, entertainment, conference room booking, etc. Another innovative technology which was the most desired during our surveys was Holographic Projection: interactive study tool, created for both individual/collaborative use to better students' understanding and learning through visualization and "virtual physical engagement of research, lecture and study materials. Lastly, individual/collaborative virtual pods: Pods that allow users to enter into a virtual reality environment such as life-like simulation of seminars. The institution will have no educational boundaries and use technology and environmental sustainable practices to promote new learning behaviors for students. SEED is environmentally responsible through the use of reclaimed materials and sustainable material choices as well as promoting local business by bringing in their organic and healthy food option for students. In the Urban Eatery, one of the most flexible features is the main tables and benches which are interconnected and capable of being lifted off the ground for social events to occur. Features such as utilization of grey and black water for indoor water usage and low VOC for natural indoor air quality enhance and promote sustainability thus creating an overall sustainable environment that allows optimal productivity for students. At the heart of the institution are the newly developed virtual classrooms which are the SEED of growth and knowledge/ the spacious and multi-purpose virtual classroom on the first floor provides students improved mobility for their learning experience with the professors. Interactive holographic tables for professors facilitate innovative learning experiences and offer more perspectives for students. The second level virtual classroom is more collaborative and informal. It provides an all-around interactive virtual board and holographic projection tables for students to have more learning opportunities with the professor. The classroom is also a workshop/tutorial based environment that improves student to professor engagement through one on one interaction. SEED harmonically blends cultural behaviors and virtual technology to create an enriched environment for education. Incorporation of state of the art technology into an institution alone will not provide the most effective learning experience if it cannot promote individual learning environments, collaborative creative thinking spaces, versatile study, universal way-finding and environmental sustainability. Our research and programming will develop an innovative learning paradigm, which synchronizes all interior and environmental attributes to positively impact students' everyday learning experiences for a bright future.

## PROGRAMMING

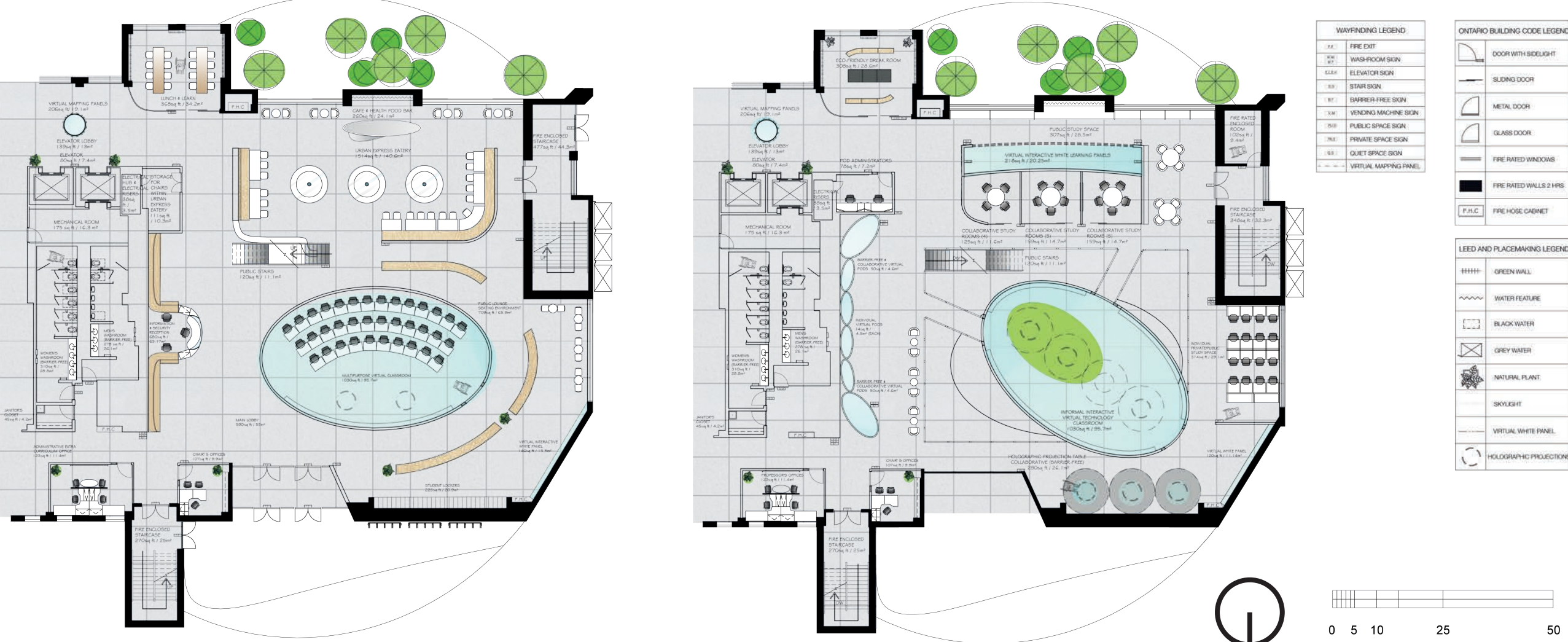
PROGRAM SPACE ALLOCATIONS AND WORKPLACE NEEDS: APPROX 8900 SQ. FT.					
DEPARTMENTS	QUANTITY	OPEN/CLOSED	UNIT SQ. FT. SQ. M.	TOTAL SQ. FT. SQ. M.	NOTES
1 PROJECT REQUIRED - LEVEL ONE					
MULTI-PURPOSE VIRTUAL CLASSROOM (CUSTOM SEATING AND HOLDERS FOR 30 VIRTUAL WALLS - WHITEBOARD - STORAGE - CUSTOM LIFT, ETC)					
1.1. MULTI-PURPOSE VIRTUAL CLASSROOM	1 (26 SEATS) DESK	CLOSED	1080 SQ. FT. / 99.7 SQ. M.	1080 SQ. FT. / 99.7 SQ. M.	
2 ECOLOGICAL AMENITIES					
2.1. MEN'S WASHROOM	1 (2 WATERCLOSET/ 4 URINALS)	CLOSED	278 SQ. FT. / 26.1 SQ. M.	278 SQ. FT. / 26.1 SQ. M.	BARREN FREE OCCUPIES 6
2.2. WOMEN'S WASHROOM	1 (6 WATERCLOSETS)	CLOSED	310 SQ. FT. / 28.8 SQ. M.	310 SQ. FT. / 28.8 SQ. M.	BARREN FREE OCCUPIES 6
2.3. JANITORS ROOM	1	CLOSED	45 SQ. FT. / 4.2 SQ. M.	45 SQ. FT. / 4.2 SQ. M.	WITH DRAIN
3 STRUCTURAL FEATURES					
3.1. FIRE RATED ENCLOSED STORAGE	1	CLOSED	477 SQ. FT. / 44.3 SQ. M.	477 SQ. FT. / 44.3 SQ. M.	FIRE RATED WALL/DOOR/WINDOW
3.2. ELEVATOR	2	CLOSED	270 SQ. FT. / 25.3 SQ. M.	270 SQ. FT. / 25.3 SQ. M.	BARREN FREE COME DOUBLE DOOR
3.3. MECHANICAL ROOM	1	CLOSED	175 SQ. FT. / 16.3 SQ. M.	175 SQ. FT. / 16.3 SQ. M.	REQUIRED TO SUPPORT ELEVATOR
4 FOOD SERVICE DEPARTMENT					
4.1. URBAN EXPRESS CATERING	1	OPEN	154 SQ. FT. / 14.3 SQ. M.	154 SQ. FT. / 14.3 SQ. M.	MULTIPURPOSE CAN ALLOW ALLOW INCORPORATION OF EVENT, GALLERY, YEAR AND SHOW
4.2. URBAN EXPRESS CATERING	1	OPEN	280 SQ. FT. / 26.1 SQ. M.	280 SQ. FT. / 26.1 SQ. M.	CAN BE MOVED
4.3. STORAGE FOR CHAIRS	1	CLOSED	111 SQ. FT. / 10.3 SQ. M.	111 SQ. FT. / 10.3 SQ. M.	ALLOW MULTI-PURPOSE SPACE FOR F.F.E. OR EVENT, GALLERY, YEAR AND SHOW
4.4. ELECTRICAL HUB	1	CLOSED	38 SQ. FT. / 3.5 SQ. M.	38 SQ. FT. / 3.5 SQ. M.	RISER
5 MAIN ENTRANCE FEATURES					
5.1. INFORMATION AND SECURITY RECEPTION	1	CLOSED	680 SQ. FT. / 63.17 SQ. M.	680 SQ. FT. / 63.17 SQ. M.	INCLUDE VIRTUAL PANEL
5.2. MAIN LOBBY	1	OPEN	590 SQ. FT. / 55.50 SQ. M.	590 SQ. FT. / 55.50 SQ. M.	MAIN ENTRANCE FOR CIRCULATION, EAST WALKWAY FOR INFORMATION DESK, WASHROOM, CLASSROOM

PROGRAM SPACE ALLOCATIONS AND WORKPLACE NEEDS: APPROX 8900 SQ. FT.					
DEPARTMENTS	QUANTITY	OPEN/CLOSED	UNIT SQ. FT. SQ. M.	TOTAL SQ. FT. SQ. M.	NOTES
6 VALUE ADDED					
6.1. ADMINISTRATIVE EXTRA CURRICULAR OFFICE	1	CLOSED	128 SQ. FT. / 11.9 SQ. M.	128 SQ. FT. / 11.9 SQ. M.	CASUAL LEARNING METHOD EX. GUEST SPEAKERS
6.2. LUNCH AND LEARN	1	CLOSED	368 SQ. FT. / 34.2 SQ. M.	368 SQ. FT. / 34.2 SQ. M.	WAITING AREA AROUND CLASSROOM
6.3. PUBLIC LOUNGE SEATING	1 (11 BENCHES & BLOWERS SEATING & TABLES)	OPEN	708 SQ. FT. / 65.9 SQ. M.	708 SQ. FT. / 65.9 SQ. M.	WAYFINDING OF FACILITY, NEWS, UPDATE, UNIVERSAL DATABASE
6.4. VIRTUAL MAPPING PANELS	1	OPEN	208 SQ. FT. / 19.3 SQ. M.	208 SQ. FT. / 19.3 SQ. M.	INTERACTIVE (SMART) SCREENS CHAIRS FOR STUDENTS
6.5. VIRTUAL MAPPING WHITE PANELS	1	OPEN	146 SQ. FT. / 13.5 SQ. M.	146 SQ. FT. / 13.5 SQ. M.	EASY WAYFINDING FOR FIRST LEVEL
6.6. PUBLIC CIRCULAR	1	OPEN	120 SQ. FT. / 11.1 SQ. M.	120 SQ. FT. / 11.1 SQ. M.	
7 PROJECT REQUIRED - LEVEL TWO					
INFORMAL INTERACTIVE VIRTUAL TECHNOLOGY CLASSROOM (CUSTOM SEATING AND HOLDERS FOR 30 VIRTUAL WALLS - WHITEBOARD - STORAGE - CUSTOM LIFT, ETC)					
7.1. INFORMAL INTERACTIVE VIRTUAL TECHNOLOGY CLASSROOM	1 (18 SEATS) DESK	CLOSED	1080 SQ. FT. / 99.7 SQ. M.	1080 SQ. FT. / 99.7 SQ. M.	
2 ECOLOGICAL AMENITIES					
2.1. MEN'S WASHROOM	1 (2 WATERCLOSET/ 4 URINALS)	CLOSED	278 SQ. FT. / 26.1 SQ. M.	278 SQ. FT. / 26.1 SQ. M.	BARREN FREE OCCUPIES 6
2.2. WOMEN'S WASHROOM	1 (6 WATERCLOSETS)	CLOSED	310 SQ. FT. / 28.8 SQ. M.	310 SQ. FT. / 28.8 SQ. M.	BARREN FREE OCCUPIES 6
2.3. JANITORS ROOM	1	CLOSED	45 SQ. FT. / 4.2 SQ. M.	45 SQ. FT. / 4.2 SQ. M.	WITH DRAIN
3 STRUCTURAL FEATURES					
3.1. FIRE RATED ENCLOSED STORAGE	2	CLOSED	348 SQ. FT. / 32.3 SQ. M.	348 SQ. FT. / 32.3 SQ. M.	FIRE RATED WALL/DOOR/WINDOW
3.2. ELEVATOR	2	CLOSED	270 SQ. FT. / 25.3 SQ. M.	270 SQ. FT. / 25.3 SQ. M.	BARREN FREE COME DOUBLE DOOR
3.3. MECHANICAL ROOM	1	OPEN	139 SQ. FT. / 12.8 SQ. M.	139 SQ. FT. / 12.8 SQ. M.	ADJACENT TO PANEL WAITING AREA
3.4. ELECTRICAL HUB	1	CLOSED	175 SQ. FT. / 16.3 SQ. M.	175 SQ. FT. / 16.3 SQ. M.	REQUIRED TO SUPPORT ELEVATOR

## MATERIALS



## NEW PROPOSED FLOORPLAN



## POSSIBLE CLASSROOM ARRANGEMENTS

## NEW PROPOSED SECTIONS



## GOALS

- 1 INDIVIDUAL LEARNING
- 2 COLLABORATIVE WORKSPACE
- 3 VERSATILE STUDY
- 4 WAY FINDING
- 5 SUSTAINABLE PLACEMAKING

