

MCGILL UNIVERSITY CLASSROOM GUIDELINES AND STANDARDS

Prepared for the Teaching and Learning Spaces Working Group (TLSWG)

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Contents

Introduction	3
Mandate	3
Context	3
Membership of Classroom Guidelines and Standards Working Group (original list only)	3
Schedule of meetings:	3
Process undertaken:	3
Intended audiences	4
Purpose	4
Scope	4
Formal learning spaces	4
Informal learning spaces	4
Principles for Designing Teaching and Learning Spaces	5
Encourage active & collaborative learning	6
Encourage student-faculty interaction	6
Enrich educational experiences	6
Provide a supportive campus environment	6
Table 1 – Recommended Standards	7
Explanation for Table 1	9
Purpose of Table	9
Capacity	9
Classroom type	9
Classroom size and structure	10
Classroom examples and images	10
Lighting	10
Window shades	10
Acoustics (room intelligibility)	10
Podium	11
Writable surfaces	11
Furniture	11
Room layouts	12
IT-AV	12

Introduction

Mandate

The Classroom Guidelines and Standards Working Group reports directly to the Teaching and Learning Spaces Working Group. The mandate of this group is to create a document for the design of classrooms at McGill University.

Context

Many of the classrooms on McGill's 190-year-old campus do not reflect what we know about student learning. In addition, the student learning experience in these classrooms is often fragmented with many different features for teaching and learning being different in many rooms on campus. In 2009, the TLSWG mandated a working group to develop guidelines for the designs of classrooms across McGill.

Membership of Classroom Guidelines and Standards Working Group (original list only)

- Adam Finkelstein, TLS, Chair
- David Harpp, Science
- Antonia Di Paola, Science
- Boyko Kouchev, Medicine
- Veronique Belanger, Law
- Christine Boynton, Management
- Jean-Paul Rémillieux, Continuing Education
- Jamshid Beheshti, Education
- Jeff Myers, Dentistry
- Debbie Morzajew, Engineering
- Cynthia Leive, Music
- Leslie Chalmers, Enrollment Services
- Rebecca Dooley, SSMU
- Sharon Roy, Content and Collaboration Solutions
- Gary Bernstein, Network and Communications Services
- Louis Richer, Network and Communications Services
- Ryan Ortiz, IST Customer Services
- Patricia Jackson, Education
- Lorraine Mercier, University Services
- Donald Nycklass, University Services
- Emmanuelle Lapointe, University Services
- Radu Juster, University Services
- Kenneth Borris, Faculty of Arts
- Carolyn Samuel, Continuing Education
- Gabrielle Pinto, University Services
- Heather Mole, OSD

Schedule of meetings:

- Dec 9, 2009 (initial planning)
- Jan 15, 2010 (sub-group to develop guidelines)
- Jan 27, 2010 (sub-group to develop guidelines)
- Feb 17, 2010 (draft review and feedback)
- Dec 10, 2010 (draft review and feedback)
- Mar 29, 2012 (final meeting)

Process undertaken:

Initial meetings included analysis of existing standards (both at McGill and at comparable institutions) as well as definition of scope of the document. Sub-group meetings were struck to work on a draft outline. The Chair developed a draft and presented drafts for feedback at subsequent meetings. The document underwent multiple revisions. A first official version was circulated to the Teaching and Learning Spaces Working Group in December 2012. This document represents the recommendations and conclusions of the discussions of the Classroom Standards Working Group which met from 2010 – April 2012. Final approval of the document was given by TLSWG in March 2013.

Intended audiences

The primary audiences for this document are:

1. External architects (contracted to design formal learning spaces for McGill)
2. Project teams (those who design, manage and construct formal learning spaces at McGill)
3. Internal units
 - a. University Services (Facilities and Operations)
 - b. IT services
 - c. Teaching and Learning Services
 - d. Enrolment Services
 - e. Other units supporting faculty
4. McGill Instructors

Purpose

This document is intended to be the primary source of information to describe formal learning spaces at McGill (ie, classrooms); and to provide:

1. Principled guidelines for room design, construction and/or renovation of formal learning spaces
2. Descriptions of formal learning spaces to aid in room selection for specific teaching and learning needs

Other McGill standards documents must be consulted for any formal learning space renovation:

- Facilities Design Standards: <http://www.mcgill.ca/facilities/design/standards>
- Accessibility Standards: <http://www.mcgill.ca/facilities/design/barrier>
- IT AV Standards: <http://kb.mcgill.ca/it/av-installations>

Scope

Formal teaching and learning space design guidelines should be discussed when designing any informal learning space. This document focused on general guiding principles. Specific standards from Design services, IT Services as well as Code Compliance apply to all classroom designs. Documents and resources consulted are available in the References section and Appendices.

Formal learning spaces

Formal learning spaces are used for structured, scheduled teaching and learning activities at McGill University most commonly known as a classroom or teaching lab. These guidelines are intended for all formal learning spaces at McGill, including spaces “owned” by McGill University and centrally scheduled by Enrolment Services, as well as rooms owned by particular departments or other units. This definition must be consistent with MELS. At the minimum, a formal learning space should contain:

1. Writable surface for instructor (whiteboard or blackboard)
2. Writable surface for students
3. Chairs for students to sit
4. Location for instructor (e.g. podium)

Informal learning spaces

Informal learning spaces are multi-purpose spaces where students and instructors can gather to work and socialize together. These spaces, which are often located in libraries, cafes and hallways, are designed to be flexible in order to best support a range of individual or group work that may take place within them. Much learning outside of the classroom will occur in these informal spaces on campus. This document does not focus on informal learning spaces however the guidelines and standards included in this document should also be discussed when designing informal learning spaces.

Principles for Designing Teaching and Learning Spaces¹

The National Survey for Student Engagement (NSSE) is a respected indicator of student engagement used by over 1450 universities across North America. Their five Benchmarks for Effective Educational Practice are based upon extensive educational research (Benchmarks of effective educational practice. National Survey of Student Engagement. http://nsse.iub.edu/pdf/nsse_benchmarks.pdf). We have adopted four of these benchmarks as principles to be considered when designing or renovating classroom spaces to support student learning; as a way of grounding classroom features in research based principles. Thus, the four Principles for Designing Teaching and Learning Spaces below consider the classroom environment within the context of what we know about students' learning. These Principles are then translated into specific design features to guide design decisions (p. 2).

Active and collaborative learning:

"Students learn more when they are intensely involved in their education and are asked to think about and apply what they are learning in different settings. Collaborating with others in solving problems or mastering difficult material prepares students to deal with the messy, unscripted problems they will encounter daily during and after college." Learning spaces should provide features that allow students to actively engage with content and to collaborate with one another.

Student-faculty interaction

"Students see first-hand how experts think about and solve practical problems by interacting with faculty members inside and outside the classroom."

Learning spaces should reduce physical distance and barriers, and facilitate exchanges between students and faculty in the classroom.

Enriching educational experiences

"Complementary learning opportunities inside and outside the classroom augment an academic program."

Learning spaces should include a range of technologies that enrich the educational experience by supporting multiple modes of teaching and learning. Such technologies should support instructor as well as student sharing of multiple information sources.

Supportive campus environment

"Students perform better and are more satisfied at colleges that are committed to their success..."

Learning spaces should provide a livable environment. Design and materials should be developed with sustainability in mind.

¹ Adapted from: *Benchmarks of effective educational practice* . National Survey of Student Engagement . http://nsse.iub.edu/pdf/nsse_benchmarks. Retrieved Sept 10, 2008.

Encourage active & collaborative learning

- a. Active engagement with content
 - Work surfaces - for notebooks, laptop, textbooks
- b. Active collaboration with each other
 - Layout - two rows on a tier, small groupings, sightlines
 - Furniture – fixed chairs that rotate, movable tables and chairs

Encourage student-faculty interaction

- a. Promote interaction
 - Layout - move about easily, multiple aisles, sightlines
 - Furniture - central podium so no 'front' of room; smaller podium to reduce distance and power relationship
- b. Promote communication
 - Acoustics support productive exchange
 - Instructor can hear all students, students can hear instructor, students can hear students
 - Sound zones should support having multiple conversations without creating an unbearable din.







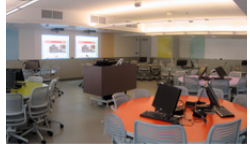
Enrich educational experiences

- a. Technologies support multiple modes of teaching and learning
 - Standard room controls to facilitate ease of use of multiple rooms
 - Two sources (e.g., document camera, powerpoint), and multiple screens
 - Access to resources (e.g., LMS, internet, virtual labs)
 - Technologies for student sharing (e.g., writable walls, screens for small group work, screen sharing)
 - Appropriate mix of desktop and laptop options
 - Power for student laptops

Provide a supportive campus environment

- a. Ensure livability
 - Ventilation
 - Temperature
 - Comfortable furniture
 - Lighting & Shades
 - Aesthetics
 - Storage
- b. Promote sustainability
 - Sustainable materials, building practices, and technologies
 - Adaptable to new uses at a reasonable cost (e.g., raised floors for conduits)
 - Re-use and re-cycle

Table 1 - Recommended Standards

Features	<div style="display: flex; justify-content: space-between; align-items: center;"> Higher Capacity ← → Lower Capacity </div>						
	Classroom type	<i>Auditorium</i>	<i>Lecture Hall</i>	<i>Tiered classroom</i>	<i>Flat classroom, 2 exits (large)</i>	<i>Flat classroom 1 exit (small)</i>	<i>Computer Classrooms</i>
Classroom size and structure	300+; 1 row per tier	120-300; 2 rows per tier**	60-120; 2 rows per tier**	60-100; flat room with front	10-59; flat room with front	20-59; flat room, raised floor with front or no front**	20-100; flat room, raised floor, no front**
Example classrooms (links require login)	Lea 132, FDA Aud	SADB 1/12, Lea 219	Bronfman 422, Stewart N 2/2	McConnell 12	Birks 203	Burnside 511	Education 627
Image of Classroom type							
Lighting	Standard scenes with automation	Standard scenes with automation	Standard scenes with automation	Standard scenes with/without automation	Manual zones (front,board,room)	Custom scenes with automation	Custom scenes with automation
Window shades	Automated	Automated	Automated	Automated/Manual	Manual	Automated	Automated
Acoustics	Amplified audio (instructor mic)	Amplified audio (instructor mic)	Amplified audio (instructor mic)	Amplified audio (instructor mic)	Amplified audio – no mic	Amplified audio (instructor/student mic)	Amplified audio (instructor/student mic)
Podium	Front, fixed, motorized	Front, fixed, motorized	Front, movable**, motorized	Front, movable**, motorized	Front, movable**, motorized / mini podium** / none	Center**, fixed	Center**, movable** OR none
Writable surfaces	None	None OR Black / White boards	Black / White boards	Black / White boards, writable walls**	Black / White boards, writable walls**	White boards, writable walls**	White boards, writable walls**

Writable surfaces (digital)	Symposium	Symposium	Symposium	Symposium	None OR SmartBoard	Symposium OR SmartBoard	Symposium OR SmartBoard
Furniture and Layout	Auditorium seating (180° rotation**), large tablet**	Fixed tables, fixed chairs (180° rotation**)	Fixed tables, movable chairs**	Movable tables** and chairs** OR Tablet chairs**	Movable tables** and chairs** OR Tablet chairs**	Round tables**, movable task chairs**	Round tables**, movable chairs**
IT-AV package	Gold AV	Gold AV	Gold AV OR Silver AV	Silver AV	Bronze AV	Custom AV	Custom AV
McGill supplied students:computer	None	None	None	None	None	1:1, student:desktop	2+:1, student:desktop
Power for student laptops	No	Optional	Optional	Optional	Optional	Yes	Yes
Video / Web conferencing	Web Conferencing (Webcam)	Web Conferencing (Webcam)	Web Conferencing (Webcam) OR Videoconferencing	None	None or Videoconferencing	Web Conferencing (Webcam)	Web Conferencing (Webcam)

** Note: These features support active and collaborative learning

Explanation for Table 1

Purpose of Table

Table 1 provides an overview of the types of formal learning spaces available at McGill and the features that ideally should characterize each type of classroom. These should be considered aspirational at this time as current classrooms may not yet conform to all standards. The Working Group suggests terminology in Table 1 for use University-wide to refer to classroom types and features. Using consistent language across the University should increase clarity of communication and decrease confusions that have arisen across databases and documentation for classrooms. The intention is that all classrooms eventually conform to the standards outlined in Table 1. Each of the features outlined in the Table is explained below.

Capacity

The continuum at the top of Table 1 shows that classroom types are generally presented by decreasing capacity. As indicated in the Principles, student faculty interaction and active and collaborative learning are goals for teaching at McGill. Interaction is a critical aspect of the learning process and the larger the classroom space the more challenging it can be to generate interaction between students and instructor and students and students. Classroom features and their ability to enhance interaction may become more critical as classroom size increases. Several examples are provided here.

Classroom type

Because descriptors such as large and small have relative points of reference, rooms can be defined as type to make it easier to differentiate room features required:

1. Auditorium

- Auditoriums are the largest spaces available on campus and are often also used for public events. These spaces tend to be sloped and have fixed, theatre-style seating.

2. Lecture Hall

- Lecture halls are larger environments that have primarily designed as teaching and learning spaces (although they may be used for events). They have fixed tiers, but may offer some greater flexibility for student learning including larger surfaces for students, seating more appropriate for learning that may be movable.

3. Tiered Classroom

- These classrooms are tiered and look similar to lecture halls but often have fewer students, more movable chairs and less IT.

4. Flat Classroom

- Flat classrooms are separated into one and two door exits (which places them into above and below 59 student capacities). They generally have movable furniture (tables and chairs or tablets depending on capacity requirements), writable walls and movable podiums. Flat classrooms also include what are commonly known as seminar rooms.

5. Computer Classroom

- Computer labs are designed as places for applied computer learning. They generally have 1:1 student to computer ratios and are geared towards both group and individual work. Layouts that support greater student faculty interaction (including placing the instructor in the center as well as having students oriented in pods) are more favorable for active and collaborative learning.

6. Active Learning Classroom

- Active Learning Classrooms are teaching and learning spaces designed to foster students' active engagement in their own learning. Characteristics of these spaces include round tables, podium in the

center of the room, writable walls as well as a number of technology affordances, such as screens sharing and multiple walls of projection.

Classroom size and structure

Room size is determined by Code compliance as well as teaching and learning needs. Initial layouts must be provided by Design services to maximize capacity, maximize interaction and comply with Code. Main room structure includes:

- Tiers (two rows per tier where possible)
- Teaching location (with/without a front of room)
- Orientation (should not be greater than 1.5:1 ratio of length:width)

Classroom examples and images

Examples of each classroom type have been selected to offer a frame of reference of current classrooms at McGill that fit each category of room type. As said above, at this time current classrooms may not yet conform to all standards outlined in Table 1.

Lighting

Layout of lightning should include multiple zone lighting. Lighting should provide effective illumination for student writing while at the same time, have less direct light shining on projected surfaces. Lighting controls should be located next to the door and not require auxiliary equipment to be controlled, as well as integrated with room automation wherever possible.

Major lighting scenes:

1. Projection (room on, lights on screens off)
2. Multimedia viewing (room off, minimal lighting)
3. Discussion / Board work (room on, lights on screens/boards on)
4. Customized lighting (while scenes would be automatically set, they should **all be customizable by the instructor** and override everything manually (from a wall control, for example).

Window shades

Shades are necessary if natural light is present. Shades should be standard automated and set with lighting scene control wherever possible. Timed to the program but manually overridden by a wall control. Blackout shades may be required in specific rooms depending on the type of teaching and learning taking place.

Acoustics (room intelligibility)

Acoustics encompasses sound travelling in and out of the room.

1. Rooms should have proper acoustic treatment to ensure that hallway noise is not heard inside the classroom and classroom noise does not interfere with nearby classrooms. Rooms should have amplified audio (and wireless audio) where possible.
2. Within the room, acoustic sound zones should be designed to maximize the following types of interactions:
 - a) instructor-student,
 - b) student-instructor,
 - c) student-student and
 - d) group interaction.

Podium

The podium is the main furniture used by an instructor (or student) to facilitate a class. The podium should be designed to suit the room and would include all instructor IT-AV related equipment, maintain space for other instructor materials and adhere to all McGill Accessibility guidelines (including motorized up/down controls). Three types of podiums are possible:

1. **Fixed podiums** – Generally larger, these podiums should not impact sightlines in the classroom, or create a barrier between instructors and students. Generally fixed podiums are only placed in Lecture Halls and Auditoriums.
2. **Movable podiums** – Generally smaller, large working surface, powered and movable. Technology should “retract” wherever possible to create a clean work surface. If podiums are movable, adequate length conduits should be used to ensure mobility. Movable podiums should be chosen from the Design services standard.
3. **Mini podiums** – These podiums may be used in combination with another type in order to promote instructor-student interaction. They are often small movable tabletops on wheels that may only hold papers, laptop or wireless keyboard and mouse. A mini podium may also be fixed to a wall, providing a location for an instructor laptop or materials in a small room.

Writable surfaces

Surfaces include writing areas for instructors and students. There are two types of writable surfaces:

1. **Writable surfaces** – Whiteboards or blackboards may be chosen depending on local instructor preferences; however, care should be taken to ensure that only one type should be located in each room. Blackboards should be wall mounted with sliding panels. Whiteboards should be directly mounted on the wall and Design services standard porcelain mounted on steel (non-reflective for projection directly upon their surface). Surfaces for students include writable wall space available for collaboration and should be mounted on all walls possible not already covered by acoustic paneling. If projector screens are used, care should be taken so that they are not mounted over writable surfaces, but rather project onto them, or to the side of them.
2. **Writable surfaces (digital)** – Interactive whiteboards (SmartBoards) and interactive pen displays (Symposiums) are surfaces where instructors can write directly on computer screens. Advantages of these surfaces include the ability to annotate any computer image as well as archive work for distribution.

Furniture

Because furniture will often change from year to year, the standards reflect general types of furniture and criteria for their selection. Classroom furniture generally falls into the following categories:

1. Auditorium seating
2. Tables and chairs (fixed and movable)
3. Tablet chairs
4. Task chairs
5. Lab stools
6. Instructor stools

Overall criteria for selecting furniture include:

- All furniture should have enough work space to accommodate student papers as well as laptops.
- All furniture should accommodate storage of bags and coats.
- Chairs should be height adjustable if used with a table.
- Chairs should have casters to promote flexibility and movement within a classroom.

- Chairs must be numbered with room number as well as individual numbers for exam seating.
- Tables should be able to be wired for power if required.
- Movable tables should be able to be combined into groups with table legs not interfering with student movement.

Specific Criteria used to select furniture at McGill – See *Appendix 1*

Room layouts

Furniture selection can have a great impact on capacity. Layouts should support TLSWG principles, specifically related to active and collaborative learning and student faculty interaction. For rooms with movable furniture, multiple layouts should be made available upon project completion (including layouts for collaboration and group work). Care should be taken when designing layouts to ensure that all seating is used or stored to fit the capacity of the room.

IT-AV

Instructional technology and audiovisual equipment are used in the classroom to enhance communication, interaction, and connectedness to other contexts. This includes projectors, media players (Blu-Ray), writable surfaces (document camera, chalkboard, whiteboard, and writable walls), automated recording systems, sound systems, connectors and cables, screens and automation. It also includes computers at podiums along with their accessories such as Sympodium tablets. It would also include any computers or AV used by students in the classroom. As of 2012, all installations should be digital, HD or WXGA projectors along with HDMI and VGA connectors for instructor laptops. Custom packages should be developed only where required (for example, in Active Learning Classrooms).

IT-AV packages are proposed for each room type presented in Table 1.

Proposed categories & packages

The AV standards are intended to support the broadest range of technologies for teaching and learning given the physical attributes of a classroom. These standards should be applied within a given context and as appropriate.

Gold AV: (~\$40,000 - \$60,000) (eg, Auditorium, Lecture Hall, Tiered classroom, typically 100+ students)

<i>Projection</i>	2+ Projectors
<i>Sources</i>	Multiple simultaneous (Document Camera, Desktop computer, Laptop computer input, Aux AV input)
<i>Display</i>	Multiple
<i>Display surface</i>	Screens
<i>Connections</i>	HDMI/VGA connection, Auxiliary AV, Analog sound, LAN jack
<i>Podium Computer</i>	Desktop with easy access to USB connection
<i>Conferencing</i>	Web Conferencing (Webcam with multiple view camera)
<i>Podium</i>	Fixed or movable, motorized
<i>Sound system</i>	Public Address system with Wireless capability, speakers
<i>Recording system</i>	Yes (Multiple screens + Video), [controlled by instructor] (impossible)
<i>Automation</i>	Creston unit (LCD/large)
<i>Help Telephone</i>	Yes (with only 2 buttons – emergency, Classroom help)

Silver AV: (~\$20,000 – \$40,000) (eg, Flat Classroom 2 exits)

<i>Projection</i>	1 Projector
<i>Sources</i>	Multiple (Laptop computer, Document Camera, Aux AV)
<i>Display</i>	Single
<i>Display surface</i>	Screen or writable wall
<i>Connections</i>	HDMI/VGA connection, Auxiliary AV, sound, LAN jack
<i>Podium Computer</i>	Optional
<i>Conferencing</i>	Optional – Web Conferencing (Webcam with multiple view camera)
<i>Podium</i>	Movable, motorized
<i>Sound system</i>	Public Address system with Wireless capability, speakers
<i>Recording system</i>	Optional (Screen only)
<i>Automation</i>	Creston unit (LCD/small)
<i>Help Telephone</i>	Yes

Bronze AV: (~\$9000) (eg, Flat Classroom 1 exit)

<i>Projection</i>	1 Projector (Normal or Ultra Short Throw) OR 1 Plasma
<i>Sources</i>	Single (Laptop computer, Aux AV)
<i>Display</i>	Single
<i>Display surface</i>	Screen or Writable wall
<i>Connections</i>	HDMI/VGA connection, Auxiliary AV, sound, LAN jack
<i>Podium Computer</i>	None
<i>Conferencing</i>	None
<i>Podium</i>	Movable, motorized OR mini-podium
<i>Sound system</i>	Room speakers or USB speaker/mic
<i>Recording system</i>	No
<i>Automation</i>	Creston MPC-M5 Button panel
<i>Help Telephone</i>	Yes

Room control interface

The room control interface is the unit designed to automate, control and interact with the installed AV in the classroom. Interface should be standardized based on 3 standard packages (plus custom interfaces for specialized rooms). AV in complex rooms (such as Active Learning Classrooms) will require custom programming. Previous templates should be used wherever possible. Interface designs should be pre-approved via the NCS scope of work and should be designed before construction begins.